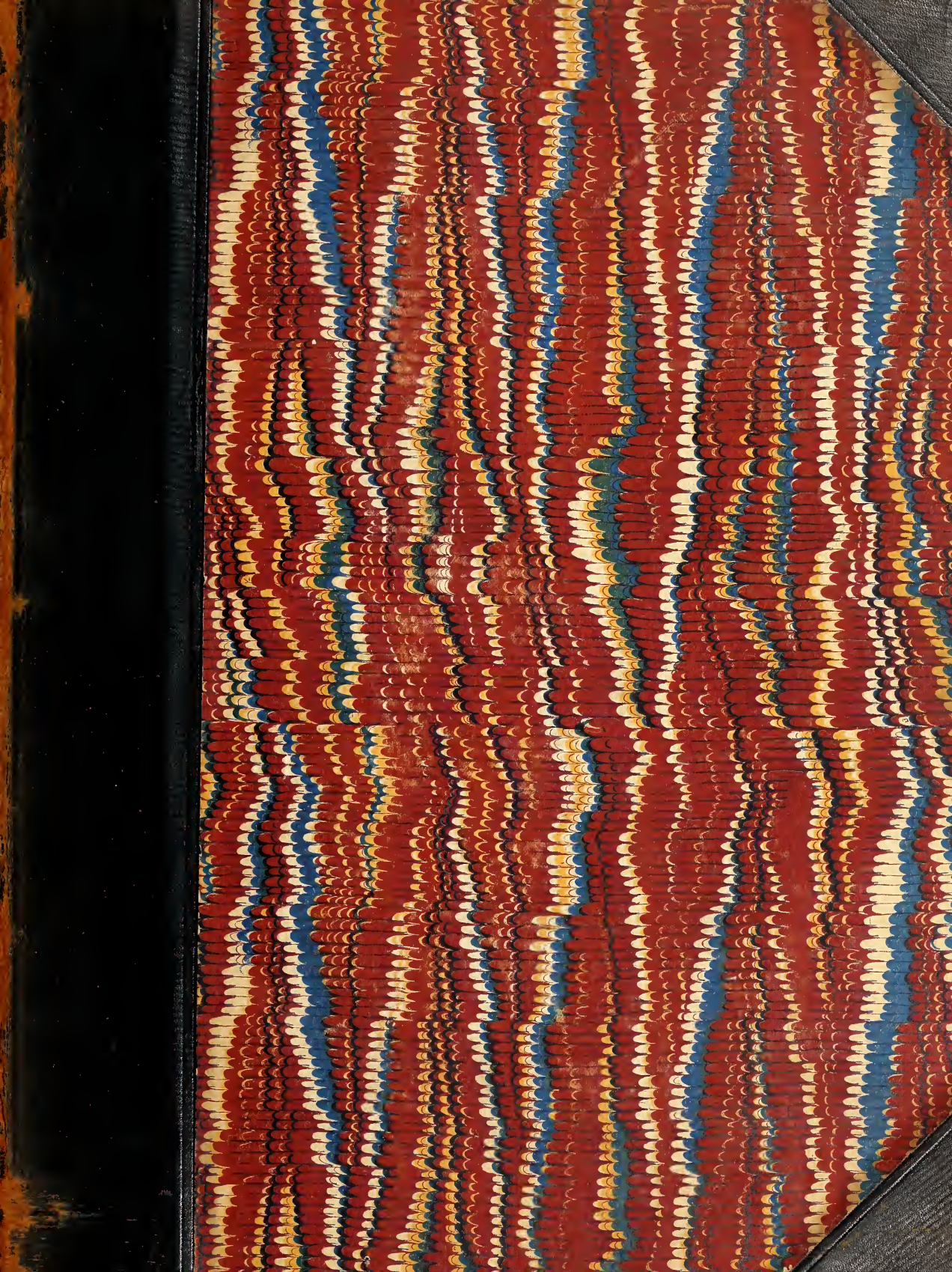


Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

'43

LIBRARY

OF THE

UNITED STATES
DEPARTMENT OF AGRICULTURE

Class 1

Reserve Book Ag84W

8—1577

349750 V.4

24

46347

UNITED STATES DEPARTMENT OF AGRICULTURE

INDEX TO VOLUME IV

WEEKLY NEWS LETTER

AUGUST 9, 1916—AUGUST 1, 1917

[Heavy figures indicate the issue number; light figures indicate the page number.]

Accounting—
- cooperative stores, **10**, 7.
- farm, **26**, 2.
- importance, **52**, 4.
- use of diary, **28**, 4.

Acid phosphate, fly-breeding preventive, **40**, 3.
Acidity, corn, testing, **25**, 1.
Adulteration—
- food products, **24**, 2.
- redtop, **1**, 4.

Agriculture—
- Department, appropriation act, 1917, **5**, 1.
- school credit for home work, **1**, 7.
- Secretary's report, summary, **20**, 1.

Alcohol test for pectin, **47**, 5.
Alfalfa—
- seed warning, **38**, 9.
- Turkestan, **38**, 9.
- varieties, **12**, 5.
- weevil, description and control, **2**, 1.

Alsike clover. *See* Clover, alsike.
Aluminum—
- cleaning, **17**, 4.
- for cleaning silver, **15**, 2.

Animal Industry Bureau, appropriations, 1917, **5**, 2.
Animals—
- breeding, keeping, **42**, 2.
- dead, shipment, **4**, 4.
- destructive, **40**, 11.
- dip, lime-sulphur, **22**, 8.
- noxious, **19**, 4.

Ant—
- Argentine, **7**, 6.
- white, **11**, 6.

Aphis, corn root, **45**, 4.
Apple—
- cider, canning, **13**, 7.
- leaf-sewer, **14**, 3.
- pest, dock false-worm, **23**, 4.
- sirup, **13**, 8.

Apples—
- canning cull, **13**, 8.
- color, **36**, 7.
- early, harvesting, **52**, 4.
- packing method, **51**, 5.
- spraying, **39**, 4.

Appropriation, agricultural, 1917, **5**, 1.
Argentine ant, **7**, 6.
Army worm—
- control, **44**, 2.
- fall, **3**, 4.

Arsenate, lime, for spray, **44**, 3.
Arsenic, spray, cutworms, **38**, 7.
Asparagus—
- care of bed, **51**, 6.
- rust-resistant, **31**, 3.

Assistant Secretary—
- statement on manure waste, **50**, 5.
- tractor statement, **40**, 3.

Assistants, Bureau of Markets, **52**, 8.

Associations—
- bull, **41**, 6.
- cooperative, draft of bill, **32**, 4.
- marketing, **52**, 7.
- selling, **41**, 7.

Aunt Jerusha's recipes, **50**, 6.

Baby beef production, **44**, 4.
Back-yard poultry, **36**, 3.
Bait, poisoned-bran—
- army worm, **44**, 2.
- cutworms, **38**, 7.
- grasshoppers, **41**, 5.

Bankers aid cattle industry, **1**, 5.
Banks, storage, **51**, 7.
Barley—
- seed, **22**, 8.
- varieties, **37**, 4.

Barn, sheep, **49**, 5.
Barriers, to control cutworms, **38**, 7.
Basket law, standard, **6**, 1.
"Be Canny," **48**, 3.
Beans—
- canning, **50**, 7.
- for late planting, **47**, 8.
- garden, **37**, 8.
- "soaked," **29**, 4.
- string—
  - canning, **52**, 8.
  - fermentation, **47**, 6.

Bedbugs, eradication, **12**, 8.
Beef—
- baby, production, **44**, 4.
- cattle—
  - feeding in Mississippi, **8**, 7.
  - wintering, **6**, 3.

Bees—
- management, **44**, 2.
- need storage room, **46**, 2.
- spring care, **39**, 10.
- wintering, **17**, 2.

Beets—
- baby, canning, **50**, 5.
- drying, **50**, 5.
- fall, in South, **4**, 1.
- fermentation, **47**, 6.
- garden, **37**, 8.

Belgian hares for meat, **48**, 2.
Bermuda-grass pasture, **50**, 8.
Billbugs, control measure, **45**, 5.
Bills of fare—
- breakfast, dinner, supper, **36**, 2.
- lunch, **15**, 4.

Binders, corn, **9**, 6.
Bird—
- bulletin, no free copies, **41**, 6.
- law in force, **24**, 4.
- reservations, **27**, 4.

Birds—
- attracting, **16**, 3; **18**, 2.
- census, 1915, **19**, 2.

15308—17——1

Dairy—
butter, prize winner, **19**, 2.
calves, feeding, **30**, 3.
cattle, cottonseed meal, **33**, 3.
cow, testing associations, **19**, 1.
cows—
feeding, **2**, 1; **8**, 1.
fish meal for, **6**, 7.
legumes for, **47**, 7.
records, **19**, 1.
testing, **25**, 1.
values, **7**, 7.
farm, use of ice, **11**, 4.
industry, **23**, 3.
interests, cooperation, **37**, 9.
products, increase, **31**, 2.
sterilizer, **1**, 1.
home made, **33**, 3.
Dairying—
community, **35**, 2.
cooperative, **4**, 4.
profit in, **6**, 6.
South, **13**, 3.
winter, **1**, 7.
Dandelion greens, canning, **38**, 10.
Danvis Folks, quotations, **50**, 6.
Dasheen, value, growing, etc., **27**, 2.
Date breeding, **20**, 6.
Department—
directory, **1**, 8; **6**, 8; **10**, 8; **20**, 8.
history, **17**, 3.
has no game birds, **37**, 9.
has no seed for sale, **42**, 3.
new divisions, **40**, 3.
Demonstration, feeding, **40**, 2.
Dinner plans, **40**, 8.
Dip, lime-sulphur, **22**, 8.
Dipping increases milk flow, **49**, 4.
Directory—
Department, **1**, 8; **6**, 8; **10**, 8; **20**, 8.
game officials, **4**, 4.
Disease—
horse and mule, **26**, 2.
peach scab, control, **37**, 8.
potato, **25**, 1.
Diseases—
apple, **39**, 4.
cattle, prevention, **46**, 2.
peach, **39**, 5.
potatoes, **35**, 3.
sweet-potato, **35**, 4.
Disinfection, seed potatoes, **35**, 3.
Distribution of farm products, **20**, 2.
Ditch traps for army worm, **44**, 2.
Ditches to control cutworms, **38**, 7.
Diary for accounts, **28**, 4.
Diet, place of various foods, **41**, 9.
Dock false-worm, **23**, 4.
Dogfish for stock feed, **6**, 8.
Drainage, remedy for wireworms, **46**, 1.
Drying—
campaign, **52**, 2.
beets, **50**, 5.
home, method, **45**, 4.
surplus products, **48**, 5.
urged by Secretary, **48**, 1.
vegetables, **49**, 7.
Dry-mash feeder (illus.), **7**, 7.
Ducks, wild, watch for bands, **11**, 1.
Dust explosions, thresher, **13**, 4.

Earwig, European, **48**, 7.
Economy—
leather, **42**, 4.
meat, **39**, 9.
Egg—
toast, **39**, 7.
yolks, fat, **21**, 4.
Eggplant beetle, **11**, 5.
Eggs—
bad, traffic, **42**, 5.
candler, homemade, **33**, 1.
candling device (illus.), **1**, 1.
cheaper, production, **50**, 4.
Eggs—Continued.
cold-storage, **28**, 4.
feed cost, **50**, 4.
fertility, testing, **33**, 1.
food value, **28**, 3.
infertile, **42**, 8.
production, **37**, 10.
preserving, **28**, 4; **37**, 11.
sanitary control, **24**, 2.
selection, **28**, 4.
spoiled by wetting, **44**, 5.
turkey, care, **42**, 5.
wheatless ration, **46**, 4.
winter, **26**, 1.
Egyptian cotton, development, **28**, 3.
Engineering, rural, **19**, 3.
Entomology Bureau, appropriations, 1917, **5**, 5.
Erosion, prevention, **40**, 5.
European earwig, **48**, 7.
Ewe lambs, saving urged, **46**, 3.
Ewes, care after weaning, **46**, 2.
Explosions, thresher dust, **13**, 4.
Extension work, **20**, 6.
county agents, **19**, 1.
growth, **3**, 4.
South, **18**, 1.

Fall—
army worm, **3**, 4.
food acre, **52**, 3.
work in rose gardens, **11**, 6.
Farm—
boys, war service, **43**, 4.
business, analysis, **26**, 2.
butter improvement, **10**, 4.
equipment, sheep raising, **49**, 5.
hogs, management, **45**, 5.
insurance, **9**, 7.
labor—
analysis, **41**, 3.
increasing efficiency, **43**, 3.
organization, **45**, 2.
problem, **42**, 1.
living costs, **18**, 2.
loans, short-time, **10**, 4.
production, **26**, 1.
sheep raising, **49**, 5.
woodlands, **33**, 3.
work, normal day's, **10**, 7.
Farm Management Office, appropriations, 1917, **5**, 4.
Farmers—
city's duty to, **9**, 1.
bulletins, new, **5**, 7; **22**, 6; **26**, 3; **29**, 4; **34**, 4; **43**, 5.
fire insurance, **36**, 5.
Farming—
fox, **34**, 1; **38**, 5.
looking forward, **49**, 1; **52**, 3.
Fat—
chicken, value, **43**, 8.
food, economy, **22**, 7.
in cookery, **21**, 4.
place in diet, **41**, 9.
saving, **50**, 5.
vegetable, **37**, 8.
Federal-aid road act, **4**, 1.
Feed—
cost of eggs, **50**, 4.
rations for chickens, **50**, 2.
Feeder, dry-mash (illus.), **7**, 7.
Feeding—
dairy calves, **30**, 3.
dairy cows, **2**, 1; **8**, 1.
demonstration, **40**, 2.
in Mississippi, **8**, 7.
range cattle, **30**, 1.
value of plants, **24**, 4.
young chicks, **37**, 7.
Fermentation method of preservation, **47**, 6.
Fertilizers—
home garden, **33**, 4.
problem, **20**, 7.
supply, securing, **49**, 1.
Fees, motor, **48**, 4.
Finance, rural, **21**, 1.
Fire insurance, farmers', **36**, 5.

Fireless cooker, homemade (illus.), **20**, 4.
Fish—
meal—
analysis, **6**, 7.
for dairy cows, **6**, 7.
for pigs, **6**, 7.
for poultry, **6**, 7.
waste, utilization, **6**, 7.
Flag Day address, President's, **47**, 1.
Flax, effect on land, **47**, 5.
Flea-beetle, corn, **46**, 4.
Flies, breeding experiments, **40**, 3.
Flood service, **26**, 2.
Flour—
home-mixed, **42**, 6.
substitutes, **49**, 7.
Flowers, fall care, **14**, 4.
Fly, melon, Hawaii, **32**, 4.
Food—
administration, H. Hoover, **43**, 1.
bills, Secretary's statement, **45**, 1.
combinations, **39**, 8.
conservation, **38**, 1; **40**, 12.
containers, ordering, **46**, 6.
control—
bill, **41**, 1.
revised bill, **44**, 1.
cooking, **38**, 12.
cost, reducing, **48**, 6.
cowpeas, **41**, 10.
crops, production, **20**, 2; **23**, 3; **37**, 1.
crops, storage, **51**, 1.
fat, economy, **22**, 7.
groups, **40**, 7; **41**, 9.
handling, **40**, 12.
hoarding, **44**, 2.
human, keep out of garbage, **50**, 6.
potatoes as, **26**, 3.
President's statement, **43**, 1.
prices, fixing, **39**, 3; **43**, 8; **44**, 1.
production—
conference, **38**, 1.
report, **39**, 1.
small area, **38**, 11.
safeguarding, **24**, 1.
selecting table fowls, **24**, 3.
situation, Secretary, **31**, 1; **43**, 1.
skim milk, value, **27**, 3.
stored, insects, **45**, 3.
supply, **23**, 1.
thrift, **36**, 8; **37**, 7, 12; **38**, 12; **39**, 12; **40**, 12; **41**, 9, 10, 12; **42**, 6; **43**, 8; **44**, 7.
value—
buckwheat, **43**, 2.
eggs, **28**, 3.
milk, **37**, 6.
soy beans, **36**, 7.
waste, **36**, 6; **37**, 12.
home, **46**, 6.
garbage, **45**, 8.
prevention, **35**, 1.
Secretary, **35**, 1.
Food and drugs act enforcement, **20**, 2; **21**, 1; **22**, 4; **24**, 1; **25**, 3.
Foods—
canned, unlabeled, **2**, 2.
interchangeable, **46**, 8.
new, use, **38**, 12.
perishable, care, **45**, 6.
selection, **36**, 1; **37**, 7; **38**, 7; **41**, 9.
Foot and mouth disease, Switzerland, **26**, 4.
Forage—
crops—
for hogs, **47**, 3; **51**, 3.
for South, **43**, 3.
sweet clover, **48**, 7.
Forecasts, weekly, **51**, 8.
Forest land, reclaiming, **20**, 7.
Forest Service—
appropriations, 1917, **5**, 4.
protects grazing preferences, **45**, 3.
Forests, national, **22**, 1.
roads, **19**, 3.
Formaldehyde treatment for potatoes, **35**, 3.
Fox farming, **34**, 1; **38**, 5.
Foxtail millet, **38**, 7.
Fruit—
and nut confection, **10**, 5.
canning without sugar, **1**, 3.
juice, pectin determination, **47**, 5.
juices for jelly, **46**, 8.
spraying, **39**, 4.
Fruits—
marking containers, **51**, 4.
new, **19**, 4.
place in diet, **41**, 9.
spoilage prevention, **45**, 6.
Fur—
farm, **24**, 3.
production from rabbits, **28**, 2; **41**, 5.
Fusarium, potato, **22**, 1.

Game—
birds, **37**, 9.
directory of officials, **4**, 4.
illegal traffic in, **6**, 6.
laws, 1916, **15**, 3.
reservations, **27**, 4.
Garbage—
analysis urged, **45**, 8.
feeding to hogs, **48**, 3.
keep human food out of, **50**, 6.
Garden—
back-yard, **36**, 8.
beans, beets, peas, **37**, 8.
beans for late planting, **47**, 8.
clubs, **15**, 1.
crops, succession, **45**, 8.
cultivation, **38**, 8.
fall cleaning, **13**, 4.
fall, in South, **4**, 1.
home, hints, **33**, 4; **34**, 4; **35**, 4.
pests, **38**, 6.
rose, **11**, 6.
rose and peony, **29**, 3.
soil preparation, **37**, 6.
suggestions, **49**, 6.
surplus, saving, **48**, 5; **52**, 2.
tips, **36**, 4.
Garlic flavor, milk, **28**, 1.
Goose raising, **30**, 6; **49**, 1.
Geraniums, fall care, **14**, 4.
Gingerbread, **39**, 7.
Girls' pig club, **44**, 5.
"Good tacticks," **50**, 8.
Grades, wheat, tentative, **29**, 3.
Grading—
potatoes, **17**, 2.
produce, suggestions, **49**, 2.
Graham bread, recipe, **42**, 6, 7; **44**, 7.
Grain—
early sowing, **37**, 4.
harvesting methods, **46**, 4.
hints on care, **51**, 6.
inspector's licenses, **3**, 1.
notice to shippers, **23**, 4.
rust, **13**, 1.
saved by pastures, **47**, 5; **49**, 8.
saved by silos, **49**, 6.
shippers must report, **23**, 4.
spring seed, **22**, 8.
standards, **24**, 2.
act, penalties under, **3**, 1.
hearing, **11**, 7.
wheat, **36**, 1.
water content, **15**, 1.
wheat grades, tentative, **29**, 3.
Grapes—
berry moth, **45**, 6.
diseases and insect pests, **43**, 2.
muscadine, **2**, 4.
spraying, **43**, 2.
Grass—
clippings for poultry, **45**, 2.
timothy, seeding and management, **3**, 3.
Grasses—
identification, **22**, 5.
rusts, **13**, 1.
Grasshopper control, **41**, 5; **44**, 4.

Grazing—
cooperative, **12**, 5.
geese, **49**, 6.
poultry, **22**, 4.
preferences protected, **45**. 3.
Greens, dandelion, canning, **38**, 10.
Ground squirrels, extermination, **40**, 11.

Handling cut timber, **10**, 8.
Harness, preservation, **42**, 4.
Hare, black Siberian, **28**, 2.
Harvesting—
apples and peaches, **52**, 4.
corn, **9**, 6.
economical methods, **46**, 4.
hints, **51**, 6.
sweet-clover seed, **50**, 4.
Hasty pudding recipes, **50**, 6.
Hauling costs, **15**, 1.
Hawaii, melon fly, **32**, 4.
Hay—
baled, warning, **18**, 4.
crops for South, **43**, 3.
hints on care, **51**, 6.
legume, for dairy cows, **47**, 7.
timothy, harvesting, **3**, 3.
Haying, reducing cost, **47**, 3.
Help, hired, cost of board, **18**, 4.
Hemp, development, **18**, 4.
Hen—
how to set, **32**, 1.
mother, care, **40**, 9.
sitting, care, **33**, 1.
Hens, sitting, lice, **39**, 8.
Hides, imported, regulation, **19**, 3.
Highway bonds, **12**, 1.
History, Department, **17**, 3.
Hoarding foodstuffs, **44**, 2.
Hog—
cholera—
control, Missouri, **50**, 3.
fighting, **49**, 8.
prevention, **11**, 8.
quick action needed, **45**, 3.
pasture, **49**, 8.
peanut as feed, **22**, 6.
Hogs—
breeding sows, **40**, 1; **41**, 2.
breeds, choosing, **32**, 3.
brood sow and litter, **45**, 6.
brood-sow inoculation, **48**, 8.
care of growing pigs, **50**, 3.
controlling cholera, Missouri, **50**, 3.
fall forage crops, **51**, 3.
farm, management, **45**, 5.
feeding garbage to, **48**, 3.
forage crops for, **47**, 3.
pasturing on sweet clover, **49**, 4.
production urged, **40**, 4; **41**, 7.
raising, **50**, 8.
sick, quick action needed, **45**, 3.
summer care of boar, **47**, 4.
tuberculosis, **29**, 1; **41**, 8.
Home—
canning method, **49**, 7.
cured meat, **7**, 8; **43**, 5.
drying methods, **45**, 4.
economics—
funds, **22**, 4.
planning meals, **40**, 7.
work, **14**, 1.
flour mixing, **42**, 6.
food waste, **46**, 6.
garden hints, **33**, 4; **34**, 4; **35**, 4.
grinding of corn, **50**, 6.
management, **39**, 12.
storage, **51**, 1.
Honey—
production methods, **46**, 2.
yields, curb swarming to increase, **44**, 2.
Horse—
disease, **26**, 2
judging age, **24**, 4.
manure, Criddle mixture, **41**, 5.
Horses—
farm work, values, **5**, 7.
pasturing on sweet clover, **49**, 4.
pure-bred stallions, **42**, 3.
warning to owners, **48**, 5.
Horticultural board, Federal, appropriation, 1917, **5**, 7.
Houses—
chicken, **50**, 1.
storage, potato, **51**, 7.
Household—
conveniences, **7**, 3.
labor, **19**, 4.
Huskers, corn, **9**, 7.

Ice, use on dairy farm, **11**, 4.
Illinois, tuberculosis quarantine lifted in 5 counties, **1**, 8.
Illustration—
codling moth trap **38**, 5.
combined china closet, etc., **7**, 3.
crimson-clover seed stripper, **41**, 4.
cutting seed potatoes, **33**, 1.
dry-mash hopper, **7**, 7.
egg candler, **1**, 2.
fireless cooker, **20**, 4.
self-feeder for pigs, **2**, 3.
Importations, potato, **11**, 4.
Incubator, using, **28**, 1.
Indian pudding, **39**, 7.
Infantile paralysis, **1**, 3.
Inoculation, brood-sow, **48**, 8.
Insect—
common cabbage worm, **30**, 4.
control, **18**, 3.
new branch, **45**, 3.
melon, Hawaii, **32**, 4.
peach, **21**, 3.
potato, **29**, 2.
Insecticide board, appropriation, 1917, **5**, 7.
Insecticides, improvement, **13**, 4.
Insects—
apple, **39**, 4.
grape, **43**, 2.
peach, **39**, 5.
potato beetles, **51**, 4.
protecting corn from, **10**, 1.
stored food, **45**, 3.
Inspection—
corn, **12**, 6.
plants by mail, **12**, 4.
Insurance—
farm, **9**, 7.
fire, farmers', **36**, 5.
Inventions dedicated to public, **20**, 7.
Ironing board, **7**, 3.
Irrigation, garden, **38**, 8.

Jack rabbits, extermination, **40**, 11.
Japanese quince jelly, **17**, 4.
Jelly—
from fruit juices, **46**, 8.
Japanese quince, **17**, 4.
making, sugar economy, **47**, 5.
Johnny-cake recipe, **50**, 6.

Kafir clubs, **15**, 1.
Kainit, fly-breeding preventative, **40**, 3.
Kale, fall, in South, **4**, 3.
Kansas canning team, **50**, 7.
Kaoliang clubs, **15**, 1.
Kelp, potash from, **22**, 5.
Kinks from county agents, **11**, 7.
Kitchen waste, **39**, 12.

Label required by food and drugs act, **25**, 3.
Labor—
farm—
analysis, **41**, 3.
increased efficiency, **43**, 3.
organization, **45**, 2.
problem, **42**, 1.
household, **19**, 4.
Lambs—
ewe, saving urged, **46**, 3.
weaning, **46**, 2.

Land—
effect of flax, **47**, 5.
new, utilization, **40**, 1.
waste, expensive, **7**, 1.
Larkspur poisoning, **7**, 6.
Law—
agricultural appropriation, 1917, **5**, 1.
cotton-futures, **3**, 4; **7**, 5.
Federal-aid road, **4**, 1.
Federal farm loan, **27**, 1.
food and drugs—
enforcement, **20**, 2; **24**, 1.
violations, **7**, 4.
grain standards, **3**, 1.
meat-inspection, violations, **5**, 8; **26**, 4; **41**, 9; **50**, 4.
migratory-bird, in force, **24**, 4.
quarantine, violations, **5**, 8; **26**, 4; **41**, 9; **50**, 4.
seed-importation, **5**, 3.
amended, **7**, 5.
standard basket, **6**, 1.
28-hour, violations, **5**, 8; **26**, 4; **41**, 9; **50**, 4.
warehouse, **3**, 1.
Lawn—
making, **7**, 3.
repairing, **6**, 5.
Laws, game, 1916, **15**, 3.
Leaf blotch on roses, **11**, 6.
Leaf-folder, sweet potato, **47**, 6.
Leaf roll, potato, **22**, 3.
Leaf-sewer, apple, **14**, 3.
Leather economy, **42**, 4.
"Left overs," utilizing, **39**, 8.
Leghorns produce cheaper eggs, **50**, 4.
Legumes for dairy cows, **47**, 9.
Lettuce and radishes, **41**, 2.
Lice, poultry, **39**, 8, 9.
Licenses—
classifiers and weighers, **3**, 2.
grain inspectors, **3**, 1.
revocations, **3**, 2.
Lime—
arsenate for spraying, **44**, 3.
for clover, **38**, 9.
increased use urged, **40**, 2.
Lime-sulphur, animal dip, **22**, 8.
Limewater, preserving eggs, **37**, 11.
Live stock—
breeding, **16**, 4.
keep breeding animals, **42**, 2.
marketing, **21**, 2.
suggestions for July, **49**, 2.
survey, **13**, 5.
Loan act, benefits, **27**, 1.
Loans—
collective, **9**, 7.
short-time, **8**, 1; **10**, 4; **11**, 5.
Louisiana, tick eradication, **2**, 3.
Luncheon plans, **40**, 8.
Lunches—
children's, **15**, 4.
school, **6**, 4; **10**, 5; **12**, 8.

Machines, milking, **25**, 4.
Manure—
flies breeding in, **40**, 3.
horse, Criddle mixture, **41**, 5.
poultry, **17**, 3.
waste, **50**, 5.
Market news service, **10**, 7; **21**, 3.
Marketing—
associations, **52**, 7.
black walnut, **46**, 6.
butter, **28**, 4.
by mail, **12**, 1.
city, **13**, 1.
cooperative routes, **41**, 3.
cotton, **52**, 7.
department's work, **21**, 1.
live stock and meats, **21**, 2.
meat, **31**, 4.
meat in South, **43**, 4.
meats, **16**, 1.
perishables, **11**, 1.
Marketing—Continued.
potatoes, **17**, 1.
problems, **7**, 1.
suggestions, July, **49**, 1.
August, **52**, 3.
timber, **8**, 8.
wool, **44**, 3.
Markets—
bureau, assistants, **52**, 8.
small, value, **49**, 2.
Markets and Rural Organization Office, appropriations, 1917, **5**, 6.
Meadows, timothy, management, **3**, 3.
Meals—
planning, **40**, 7.
wheatless, **43**, 8.
Meat—
animals, prices, **10**, 6.
economical use, **39**, 9.
increasing output, **23**, 2.
inspection law, violations, **5**, 8; **26**, 4; **41**, 9; **50**, 4.
marketing, **31**, 4.
markets in South, **43**, 4.
ounce of, **44**, 7.
place in diet, **41**, 9.
production, **47**, 4.
in South, **50**, 2.
substitute, **41**, 8; **50**, 7.
supply, **20**, 1; **31**, 3.
from rabbits, **48**, 2.
waste, 44, 7.
Meats—
home-cured, **7**, 8.
home curing, **43**, 5.
how to smoke, **8**, 5.
marketing, **16**, 1; **21**, 2.
Medicines, fraudulent, **24**, 2.
Melon fly, Hawaii, **32**, 4.
Mice—
protecting corn from, **10**, 1.
trapping, **48**, 8.
Mickle-Muckle, **41**, 10; **42**, 6; **43**, 8; **44**, 7.
Migratory-bird law, regulations, **51**, 8.
Milk—
contests, **48**, 3.
cooling important, **11**, 4.
cans, care, **4**, 3.
flow increased by dipping, **49**, 4.
food value, **37**, 6.
garlic flavor, **28**, 1.
gravy, recipe, **49**, 5.
high-grade, profitable, **48**, 3.
keep from spoiling, **41**, 12.
one-half cup, **42**, 6.
production costs, **32**, 3.
sanitary control, **24**, 2.
saving, **49**, 5.
skim, food value, **27**, 3.
soy-bean, **27**, 3.
waste, **42**, 6.
Milking machines, **25**, 4.
Millet, foxtail, **38**, 7.
Misbranding of redtop, **1**, 4.
Misprision of treason, proclamation, **40**, 5.
Mississippi—
feeding cattle and calves, **8**, 7.
tick eradication, **29**, 3.
Missouri, control of hog cholera, **50**, 3.
Mites, poultry, **40**, 6.
Moles, trapping, **48**, 8.
Mosaic disease, potatoes, **22**, 1.
Moth—
codling, trap (illus.), **38**, 5.
potato tuber, **29**, 2.
Motor fees, **48**, 4.
Mule disease, **26**, 2.
Mules, pasturing on sweet clover, **49**, 4.
Muscadine grapes, **2**, 4.
Mushrooms, selection, **48**, 7.

National forests, **22**, 1.
roads in, **4**, 2.
National parks, **22**, 2.
Net-weight amendment, **22**, 4.

New England, sheep, **10**, 5.
Nitrates, Secretary's statement, **43**, 7.
No-cake recipe, **50**, 6.
North and West—
canning, **44**, 6.
farm activities, July, **49**, 1.
August, **52**, 3.
work for women, **14**, 2.
Nut, fruit and, confection, **10**, 5.

Oats—
rolled, bread recipe, **42**, 6.
seeding in corn belt, **37**, 5.
varieties, **37**, 4.
winter, saving seed, **47**, 3.
winterkilled, reseeded, **31**, 1.
winter, seed, **52**, 4.
with clover, **38**, 9.
Oil—
peanut, **51**, 2.
soy-bean, **27**, 3.
Onions—
storage, **51**, 8.
wild, **41**, 6.
in pastures and wheat, **28**, 2.
Organization, farm labor, **45**, 2.
Oysters, sanitary control, **24**, 2.

Packing apples, **51**, 5.
Pancakes, stale bread, **39**, 7.
Pansies, fall care, **14**, 4.
Paper outlook, **34**, 1.
Paraffin, cleaning and reuse, **51**, 2.
Paralysis, infantile, **1**, 3.
Parcel-post marketing, **12**, 1.
Parents and club work, **4**, 3.
Parks, national, **22**, 2.
Pasture—
Bermuda grass, **50**, 8.
crops for brood sow, **45**, 6.
hog, **49**, 8.
roadside, **46**, 3.
sweet-clover, **49**, 4.
Pastures—
save grain, **47**, 5.
suggestions for July, **49**, 2.
trees, injure, **8**, 2.
wild onion in, **28**, 2.
worn-out, renewal, **48**, 7.
Patents dedicated to public, **20**, 7.
Peach—
harvesting, **52**, 4.
insect enemy, **21**, 3.
scab, control, **37**, 8.
spraying, **39**, 5.
Peanut—
as hog feed, **22**, 6.
forage for hogs, **51**, 3.
importance of crop, **51**, 2.
oil, **51**, 2.
seed for South, **48**, 6.
Peas—
canning, **50**, 7.
garden, **37**, 8.
"soaked," **29**, 4.
Pectin determination, **47**, 5.
Penalties—
under grain standards act, **3**, 2.
under warehouse act, **3**, 1.
Peony gardens, **29**, 3.
Perishables—
care and handling, **52**, 3.
conference, **52**, 5.
marketing, **11**, 1.
saving urged, **52**, 1.
shipment, **11**, 2.
standardization, **11**, 2.
supply and demand, **11**, 3.
transportation, **11**, 3.
Pests, garden, **38**, 6.
Pig—
club work, **44**, 5.
clubs, **43**, 4.
school, **45**, 5.
Pigs—
fish meal for, **6**, 7.
growing, care, **50**, 3.
self-feeder (illus.), **2**, 3.
Pink bollworm, **48**, 2.
Pits, storage, **51**, 7.
Plant—
diseases—
grapes, **43**, 2.
potato late blight, **51**, 4.
watermelon stem-end rot, **41**, 11; **52**, 6.
poisonous cicuta, **46**, 3.
quarantine, **13**, 3; **20**, 5.
Plant Industry Bureau, appropriations, 1917, **5**, 3.
Planting—
beans as late crop, **47**, 8.
bulbs, **14**, 4.
late garden crops, **45**, 8.
roses, **10**, 6.
sod crops, **40**, 1.
vegetables, **36**, 7.
Plants—
feeding value, **24**, 4.
inspection, **12**, 4.
salad, **38**, 10.
thinning, **46**, 5.
Plowing, late, to control billbugs, **45**, 5.
Plum spraying, **39**, 6.
Pocket gophers, extermination, **40**, 11.
Poisoned-bran bait—
army worm, **44**, 2.
cut worms, **38**, 7.
grasshoppers, **41**, 5; **44**, 4.
Poisoning, larkspur, **7**, 6.
Poplar canker, **21**, 3.
Porto Rico, cattle-fever quarantine, **44**, 7.
Pork—
from garbage, **48**, 3.
production urged, **50**, 8.
raw, dangerous, **22**, 5.
Potash from kelp, **22**, 5.
Potato—
bread, **13**, 6.
club work, **15**, 1.
disease, **22**, 1; **25**, 1; **35**, 3.
prevention, **35**, 1.
importations, **11**, 4.
improvement, **19**, 3.
quarantine amended, **21**, 4.
tuber moth, **29**, 2.
Potatoes—
as food, **26**, 3.
grading, **17**, 2.
marketing, **17**, 1.
planting directions, **33**, 2.
quarantine amended, **48**, 6.
seed, cutting (illus.), **33**, 1.
seed, disinfection, **35**, 3.
spraying, **51**, 4.
standardization, **17**, 2.
storage, Irish and sweet, **51**, 1.
use as source of starch, **46**, 8.
varieties, **33**, 2.
yield, **33**, 2.
Poultry—
back yard, **36**, 3.
brooding chickens, **36**, 5.
care of sitting hen, **33**, 1.
care of small flock, **37**, 9.
chicken growing, **50**, 1.
coop mother hen, **40**, 9.
costs, **36**, 3.
cottonseed meal for, **40**, 9.
cropping plan, **18**, 3.
early hatching, **29**, 1; **31**, 1; **32**, 1.
feeding young chicks, **37**, 7.
fish meal for, **6**, 7.
geese raising, **30**, 1.
grass clippings for, **45**, 2.
grazing crops for, **22**, 5.
houses, **36**, 3.
housing, **50**, 1.
increased production urged, **42**, 1.
infertile eggs, **42**, 8.

Poultry—Continued.
lice, **39**, 8, 9.
management, **42**, 8.
manure, **17**, 3.
mites, **40**, 6.
production urged, **52**, 4.
products, increase, **31**, 2.
selecting for food, **24**, 3.
should be cheap, **51**, 3.
spring work, **28**, 1.
turkey raising, **42**, 5.
turkey ranching, **32**, 3.
yard, rotation, **30**, 3.
Powdery scab, **35**, 3.
Prairie dogs, extermination, **40**, 11.
Preservation, fermentation method, **47**, 6.
Preservative, corn meal not a, **46**, 7.
Preserves, strawberry, **41**, 11.
Preserving eggs, **28**, 4; **37**, 11.
President—
flag day address, **47**, 1.
food statement, **43**, 1.
powers, food-control, **44**, 1.
treason proclamation, **40**, 5.
urges saving of perishables, **52**, 1.
Prices—
food, fixing, **39**, 3; **43**, 8; **44**, 1.
meat animals, **10**, 6.
Prize winners, 1915, **8**, 2.
Proclamation, treason, etc., **40**, 5.
Produce men, Secretary's statement, **43**, 3.
Production—
baby-beef, **44**, 4.
costs, milk, **32**, 3.
dairy and poultry, **31**, 2.
farm, **26**, 1.
food—
conference, **38**, 1.
crops, **20**, 2.
on small area, **38**, 11.
report, **39**, 1.
gardens and back yards, **36**, 8.
meat, **47**, 4.
on new land, **40**, 1.
pork, urged, **50**, 8.
poultry, increase urged, **42**, 1.
profitable, **32**, 1.
Propagation, roses, **12**, 8.
Protection, birds, **18**, 1.
Pruning roses, **10**, 8.
Public Roads and Rural Engineering Office, appropriations, 1917, **5**, 6.
Publications, report of chief, **22**, 8.
Pudding, Indian, **39**, 7.
Pumpkins, planting in corn, **46**, 3.

Quarantine—
cattle fever, Porto Rico, **44**, 7.
currant, white pine, **41**, 3.
law, violations, **5**, 8; **26**, 4; **41**, 9; **50**, 4.
lifted in 5 Illinois counties, **1**, 8.
plant, **13**, 3; **20**, 5.
potato, amended, **21**, 4; **48**, 6.
Quince, Japanese, jelly, **17**, 4.

Rabbits—
fur production, **28**, 2; **41**, 5.
meat from, **48**, 2.
Radishes and lettuce, **41**, 2.
Range cattle, feeding, **30**, 1.
Rape, forage for hogs, **47**, 3; **51**, 3.
Rat—
proof buildings, **39**, 11.
protecting corn from, **10**, 1.
trapping, **48**, 8.
Rations—
balanced, for dairy cows, **8**, 1.
beef cattle, **50**, 3.
chicken, **50**, 2.
Recipes—
bread, **42**, 6, 7; **44**, 7.
home-ground wheat, **25**, 2.
potato, **13**, 6.
cake, **36**, 2.
Recipes—Continued.
confection, **10**, 5.
corn and cheese, **46**, 8.
corn-meal dishes, **50**, 6.
cottage cheese, **45**, 7.
cowpeas, **41**, 10.
gravy, **36**, 2.
ham gravy, **50**, 5.
home drying, **45**, 4.
milk gravy, **49**, 5.
pudding and sauce, **36**, 2.
rusks, **49**, 6.
school-lunch, **6**, 4; **10**, 5; **12**, 8.
stale bread, **39**, 7.
soups, **40**, 10.
skim-milk, **27**, 4.
strawberry preserves, **41**, 11.
Reclamation projects, grazing, **12**, 5.
Redtop, adulteration and misbranding, **1**, 4.
Regulations—
bird, **4**, 4,
shipping dead animals, **4**, 4.
Reservations, game and bird, **27**, 4.
Rhizoctonia, potato, **22**, 3; **35**, 3.
Rhubarb leaves, warning, **42**, 2.
Rice bread, **42**, 6.
River and flood service, **26**, 2.
Road bonds, **12**, 1.
Roads—
act, notice by Secretary, **30**, 1.
development in forests, **22**, 1.
expenditures, **11**, 1.
Federal-aid act, **4**, 1.
Federal funds, **27**, 2.
good—
benefits, **15**, 3; **16**, 1.
effect, **14**, 1.
improvement, **15**, 1.
maintenance, **12**, 4; **19**, 3.
national-forest, **5**, 8; **19**, 3.
national park, **19**, 3.
spring work, **38**, 11.
Roadsides for pasture, **46**, 3.
Rodents, destruction, **19**, 4.
Roller tray (illus.), **7**, 3.
Root, aphis, corn, **45**, 4.
Rose gardens, **29**, 3.
fall work, **11**, 6.
Roses—
how to cut, **5**, 8.
leaf blotch, **11**, 6.
planting, **10**, 6.
propagation, **12**, 8.
pruning, **10**, 8; **11**, 6.
spraying, **11**, 6.
winter care, **10**, 7.
Rotation—
poultry yard, **30**, 3.
remedy for wireworms, **46**, 1.
Rural—
engineering, **19**, 3.
finance, **21**, 1.
Rusk recipe, **49**, 6.
Rust—
asparagus, **31**, 3.
grain and grasses, **13**, 1.
white-pine blister, **47**, 3.
Rye—
acreage in the South, **52**, 8.
bread, recipe, **42**, 6.
culture, **12**, 7.
outlook, **52**, 3.
winter, seed, **52**, 5.

Sauerkraut making, **47**, 7.
Salad plants, **38**, 10.
Scab—
peach, control, **37**, 8.
potato, **35**, 3.
School—
attendance, effect of good roads, **16**, 1.
credit for home work in agriculture, **1**, 7.
lunch, **6**, 4; **10**, 5; **12**, 8.
pig, **45**, 5.

Scrubbing chariot, **7**, 3.
Secretary—
address to commercial secretaries, **9**, 1.
appeal to producers, **37**, 1.
appeal to women, **41**, 1.
assistants, **40**, 4; **48**, 5.
food-production report, **39**, 1.
food situation, **31**, 1; **43**, 1.
food waste, **35**, 1.
notice on road act, **30**, 1.
paper outlook, **34**, 1.
report, summary, **21**, 1.
statement—
corn yield, **39**, 3.
food bills, **45**, 1.
food waste, **37**, 12.
nitrates, **43**, 7.
perishables, **52**, 5.
pink bollworm, **48**, 2.
produce men, **43**, 3.
war crisis, **46**, 1.
urges canning and drying, **48**, 1.
Secretary of Labor, statement, **42**, 2.
Seed—
adulteration and misbranding, redtop, **1**, 4.
alfalfa, warning, **38**, 9.
bed, importance, **37**, 4.
box, **34**, 1.
corn—
selection, **9**, 1.
testing, **37**, 5.
cotton—
purity, **15**, 4.
supply, **20**, 1.
crimson-clover—
scarcity, **52**, 4.
stripper (illus.), **41**, 4.
department has none to sell, **42**, 3.
grain—
spring, **22**, 8.
treating for smut, **37**, 5.
hints on care, **51**, 6.
home garden, **34**, 4.
importation law, **5**, 3.
amended, **7**, 5.
imported, supply, **18**, 3.
insuring quality, **46**, 5.
maximum returns, **35**, 1.
peanut, for South, **48**, 6.
potatoes—
cutting (illus.), **33**, 1.
disinfection, **35**, 3.
rusted, **13**, 1.
rye, supply, **52**, 8.
securing fall supply, **49**, 1.
situation committee, **40**, 9.
soy-bean, **46**, 1.
use native, **47**, 8.
sugar-beet, **19**, 2.
sweet-clover, harvesting, **50**, 4.
testing, crimson clover, **3**, 3.
trade conference, **46**, 5.
vegetable, saving, **49**, 3.
winter oats, **47**, 3; **52**, 4.
winter rye, **52**, 5.
Seeding clover, **38**, 9.
Self-feeder for pigs (illus.), **2**, 3.
Selling associations, **41**, 7.
Serum, antihog-cholera, value, **45**, 3.
Serving table (illus.), **7**, 3.
Setting a hen, **32**, 1.
Sewage disposal, **35**, 4.
Sheep—
industry, **23**, 2.
New England, **10**, 5.
pasturing on sweet clover, **49**, 4.
raising, **20**, 2; **49**, 5.
tick, control, **48**, 4.
weaning lambs, **46**, 2.
Shoes, saving, **42**, 4.
Shredders, corn, **9**, 7.
Shrubs, fall care, **14**, 4.
Silage—
corn variety for, **37**, 9.
value of stover, **50**, 1.
Silos—
save grain, **49**, 6.
treated wooden, **9**, 4.
value in saving feed, **52**, 4.
Silver cleaning, **15**, 2.
Sirup—
apple, **13**, 8.
cane, **20**, 8.
sugar, for canning, **1**, 6.
Skim milk, food value, **27**, 3.
Smut, barley, oats, and wheat, **37**, 5.
Sod crops, planting, **40**, 1.
Sodium fluorid, lice remedy, **39**, 9.
Soil—
garden, preparation, **37**, 6.
preparation for lawn, **7**, 3.
surveys, **20**, 3.
Soils Bureau, appropriations, 1917, **5**, 5.
Sorghum—
forage for hogs, **47**, 3; **51**, 3.
Sorghums, new, risky, **41**, 8.
Sorrel eradication, **38**, 8.
Soup—
cowpea, **41**, 10.
nourishing, recipes, **40**, 10.
skim milk, **27**, 4.
stale bread, **39**, 7.
South—
acreage of rye, **52**, 8.
agricultural situation, **31**, 3.
canning methods, **43**, 6.
cattle-feeding tests, **50**, 2.
crops for hay, **43**, 3.
dairying, **13**, 3.
extension work, **18**, 1.
fall garden, **4**, 1.
farming suggestions, July, **49**, 1
August, **52**, 3.
home-economics work, **14**, 1.
meat market, **43**, 4.
peanut-seed supply, **48**, 6.
Sows—
breeding, **40**, 1; **41**, 2.
brood—
and litter, **45**, 6.
inoculation, **48**, 8.
summer care, **46**, 5.
Soy beans, **23**, 4.
crop value, **18**, 4.
food value, **36**, 7.
forage for hogs, **47**, 3; **51**, 3.
seed, **46**, 1.
use native seed, **47**, 8.
uses and value, **27**, 3.
Spinach, fall, in South, **4**, 3.
Sponge, bread, recipes, **42**, 7; **44**, 7.
Spotted bur clover, **1**, 6.
Spraying—
apparatus, **39**, 6.
army worm, **44**, 2.
cutworms, **38**, 7.
fruit, **39**, 4.
grapes, **43**, 2.
materials, **39**, 6.
potatoes, **51**, 4.
reducing cost, **44**, 3.
roses, **11**, 6.
Squirrels, ground, extermination, **19**, 4.
Stallions, pure-bred, **42**, 3.
Standards—
corn, **6**, 1.
cotton, **9**, 8.
grain, **3**, 1; **24**, 2.
hearing, **11**, 7.
wheat, **36**, 1.
tentative, **29**, 3.
Standardization—
perishables, **11**, 2.
potatoes, **17**, 2.
Starch—
available sources of, **46**, 8.
place in diet, **41**, 9.
States Relations Service, appropriations, 1917, **5**, 5.
Stem-end rot, watermelons, **41**, 11; **52**, 6.
Sterilizer, dairy, **1**, 1; **33**, 3.

Stock—
feed—
dogfish, **6**, 7.
soy bean, **27**, 3.
raising, development, **23**. 2.
Stomatitis, vesicular, **26**, 2.
Storage—
adequate, providing, **52**, 3.
cold, **51**, 7.
corn, **10**, 1.
food-crop, **51**, 1.
fruits and vegetables, **40**, 12.
reports, **52**, 5.
sweet potato, **12**, 6; **43**, 4.
Stores, cooperative, **17**, 1.
Stover, ensiling, **50**, 1.
Strawberry preserves, **41**, 11.
Street sweepings, warning, **39**, 8.
Stripper, crimson-clover seed (illus.), **41**, 4.
Sugar—
consumption increasing, **29**, 4.
economy in canning, **47**, 8.
economy in jelly making, **47**, 5.
place in diet, **41**, 9.
sirup for canning, **1**, 6.
Sugar-beet—
seed, **19**, 2.
thrips, **32**, 2.
Supper plans, **40**, 8.
Swarming, desirable to curb, **44**, 2.
Sweepings, street, warning, **39**, 8.
Sweet clover—
eradication **39**, 11.
pastures, **48**, 7; **49**, 4.
seed, harvesting, **50**, 4.
Sweet corn, canning, **50**, 2.
Sweet potato—
diseases, **35**, 4.
leaf-folder, **47**, 6.
storage, **12**, 6; **43**, 4; **51**, 1.
Sweets for school lunch, **10**, 5.
Switzerland, foot-and-mouth disease, **26**, 4.

Terraces, erosion prevention, **40**, 5.
Thinning plants, **46**, 5.
Thresher-dust explosions, **13**, 4.
Thrift thought, **49**, 5, 6; **50**, 5.
Thrips, sugar-beet, **32**, 2.
Tick—
cattle—
eradication in Louisiana, **2**, 3.
eradication progress, **9**, 8.
quarantine lifted, **6**, 1.
eradication—
division, **40**, 3.
increases milk flow, **49**, 4.
Mississippi, **29**, 3.
progress, **20**, 5.
urged, **45**, 7; **47**, 4.
"good tacticks," **50**, 8.
sheep, control, **48**, 4.
Tillage, remedy for wireworms, **46**, 1.
Timothy growing, **3**, 3.
Timber—
handling, **10**, 8.
marketing, **8**, 8.
preserving, **8**, 6.
Toast, **39**, 7.
Tomatoes—
canning, **50**, 7.
color, **36**, 7.
Tractors—
to save labor, **43**, 3.
use urged, **40**, 3.
Traffic, bad-egg, **42**, 5.
Transportation, perishables, **11**, 3.
Trap—
chinch-bug, **44**, 4.
codling-moth (illus.) **38**, 5.
ditch, for army worm, **44**, 2.
mole, **48**, 8.
mouse and rat, **48**, 8.
Tray, roller (illus.), **7**, 3.
Treason proclamation, **40**, 5.
Trees, injurious to pastures, **8**, 2.

Tuberculosis—
eradication division, **40**, 3.
farm animals, **23**, 2.
hogs, **29**, 1; **41**, 8.
prevention, **29**, 4.
quarantine lifted in 5 Illinois counties, **1**, 8.
Turkestan alfalfa, **38**, 9.
Turkeys, raising, **32**, 3; **42**, 5.
Turnips, fall, in South, **4**, 1.
Twenty-eight-hour law—violations, **5**, 8; **26**, 4; **41**, 9; **50**, 4.

Vegetable—
fats, **37**, 8.
seed, saving, **49**, 3.
Vegetables—
back-yard, **36**, 8.
drying **49**, 7.
early, **34**, 1.
home storage, **51**, 1.
marking containers, **51**, 4.
place in diet, **41**, 9.
planting, **36**, 7.
production on small area, **38**, 11.
raising in cold frames, **50**, 1.
spoilage prevention, **45**, 6.
surplus, saving, **48**, 5.
Velvet beans, forage for hogs, **51**, 3.
Veterinarians, conference, meat production, **47**, 4.
"Vinegar bees," **2**, 3.
Violations of laws, **5**, 8; **22**, 4; **26**, 4; **41**, 9; **50**, 4.

Warehouse—
act, **3**, 1.
penalties under, **3**, 2.
inspection, **3**, 2.
receipts, **3**, 2.
Warehousemen, duties, **3**, 2.
Waste—
bread, **41**, 10.
butter, **43**, 8.
food, **36**, 6; **37**, 12.
home, **46**, 6.
in garbage, **45**, 8.
prevention, **35**, 1.
Secretary, **35**, 1.
kitchen, **39**, 12.
manure, **50**, 5.
meat, **44**, 7.
milk, **42**, 6.
not, want not, **52**, 2.
reduction by cold storage, **51**, 7.
Water content of grain, **15**, 1.
Waterglass, preserving eggs, **37**, 11.
Water hemlock, poisonous plant, **46**, 3.
Water requirements of cows, **1**, 3.
Waterfowl, hunting seasons, **31**, 4.
Watermelons—
shipping, **52**, 6.
stem-end rot, **41**, 11; **52**, 6.
Weaning lambs, **46**, 2.
Weather Bureau—
appropriations, 1917, **5**, 1.
weekly forecasts, **51**, 8.
Weather, special service, **2**, 4.
Weeds—
as enemies of crops, **47**, 7.
wild onion, **41**, 6.
Weevil, alfalfa, description and control, **2**, 1.
Weighers, licenses, **3**, 2.
Wheat—
and corn meal bread, **42**, 6.
exports, supply. etc., **31**, 2.
growing, 50 years, **28**, 2.
home-ground, **25**, 2.
bread, recipes, **42**, 6.
outlook, **52**, 3.
replacing by corn, **45**, 8.
seed, **22**. 8.
treating, **37**, 5.
standards, **36**, 1.
substitute, corn-meal, **43**, 8.
substitutes, **49**, 7.
tentative grades, **29**, 3.
varieties, **37**, 4.
whole, bread, **42**, 6.

Wheat—Continued.
wild onion in, **28**, 2.
winterkilled, advice, **35**, 2.
Wheatless ration for eggs, **46**, 4.
White pine—
blister rust, **47**, 3.
methods to save, **47**, 3.
quarantine, **41**, 3.
Windbreaks, planting, value, etc., **43**, 5.
Winter—
care of roses, **10**, 7.
dairying, **1**, 7.
eggs, **26**, 1.
oats for seed, **47**, 3; **52**, 4.
Wintering beef cattle, **6**, 3.
Wintering bees, **17**, 2.
Wireworms, remedies, **46**, 1.
Wood silos, treated, **9**, 4.
Woodlands, farm, **33**, 3.
Wool, marketing, **44**, 3.
Women—
Secretary's appeal, **41**, 1.
work for—
in North and West, **14**, 2.
in South, **14**, 1.
Work, farm, normal day's, **10**, 7.

Yearbook, article on horse breeding, **42**, 3.
Yields, crop, in South, **18**, 1.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., AUGUST 9, 1916. No. 1

STERILIZER FOR DAIRY.

Inexpensive Homemade Device—Milk and Cream Keep Longer When Utensils Are Sterilized.

A simple and efficient homemade steam sterilizer which can be built at a cost not to exceed $5 to $10 is described in a new Farmers' Bulletin, No. 748, prepared by the Dairy Division of the department. This bulletin can be obtained free of charge on application to the department.

The ordinary washing of dairy utensils, the dairy specialists point out, is not sufficient to insure freedom from bacteria. The only safe method of destroying in utensils germs which affect the hygienic and keeping qualities of milk and cream is by sterilization. Even when dairy utensils appear clean, if they have not been properly sterilized they may harbor vast numbers of bacteria which contaminate milk or cream that comes into contact with them. Live steam at a temperature of at least 205° F. is a thoroughly effective agent and one that this homemade apparatus makes readily available on the average dairy farm.

When placed on a stove or oil heater the apparatus in question develops steam in a shallow pan and introduces the live steam through a pipe into milk cans and buckets. In sterilizing separator parts, small articles, and strainer cloths, a galvanized-iron box is placed over the steam outlet and used as a sterilizing chamber.

How to Construct the Sterilizer.

The sterilizer for cans and milk pails consists of (1) a roasting pan, (2) a specially prepared, insulated cover for it, and (3) a steam outlet pipe that runs through the cover. An ordinary roasting pan of standard size, about 20 inches long, 14 inches wide, top measurement, and 3 inches deep, will be satisfactory.

The insulated cover for the pan is in three layers, the lowest of which is a sheet of galvanized iron covering the roasting pan and lapping a little over the edges. On the bottom of the cover solder flanges to meet and fit the inside edges of the pan and make a tight cover.

For the steam pipe, cut a hole 1½ inches in diameter, and around it solder securely a steam outlet pipe 4½ inches high and 1½ inches in diameter.

To make the second layer of the cover, use a piece of asbestos board five-sixteenths of an inch thick and slightly smaller than the metal sheet. In the center cut a hole which will fit tightly around the steam outlet pipe.

For the top layer of the cover make a shallow pan of galvanized iron 14 inches square, with sides five-eighths of an inch high, and cut a hole for the steam pipe. When the pan is pressed down tight on the asbestos, solder it firmly to the steam outlet pipe.

On the pan, solder, on edge, four strips of stiff galvanized iron three-eighths of an inch wide. They should start 1 inch from each corner and should run to within 1 inch of the outlet pipe. These strips provide ridges which raise the milk can from the pan and permit free circulation of steam.

Paper may be used instead of asbestos for the middle layer of the cover. Pack papers tightly to a height of three-eighths of an inch over the galvanized-iron bottom, and on top place another galvanized-iron sheet of the same size. Solder these two sheets all around the edges, so as to make a tight seam. This makes an insulated cover and pad about three-eighths of an inch thick, which will be found as satisfactory, and even preferable, to the asbestos insulation.

The sterilizer may be used on the kitchen stove or other stove, or over any other heat that is sufficient to furnish steam at the end of the outlet pipe at least 205° F., or preferably 210° to 211° F. A thermometer, if placed in the outlet pipe, will show whether the steam is hot enough.

Operating the Sterilizer.

Place the outfit, with 1 inch of water in the pan, on the stove, and see that the cover

(Continued on page 6.)

INDEX FOR VOLUME III.

A complete subject index of Volume III of the Weekly News Letter is now in course of preparation. This index will be issued as a supplement to the News Letter, but will be supplied only to those who send in a request for it.

Those wishing this index should address a postal card to the Editor and Chief, Division of Publications, U. S. Department of Agriculture, Washington, D. C. Copies will be mailed free to those requesting it as soon as the supplement is issued.

EGG-CANDLING DEVICE.

Portable Electrical Apparatus for Traveling Egg Collectors—Method of Home Construction.

The requirements of the egg trade and certain State and Federal food regulations make it necessary for the shipper to know what quality of eggs he is shipping to consumers. This means that all eggs should be tested by candling in the producing section. Storekeepers and egg buyers in the towns can candle by means of a shielded light in a dark room. The traveling collectors, however, who gather eggs from the farmers lack these facilities. To assist these collectors, the egg-handling specialists of the department have developed a simple homemade electrical candling outfit that can be used out of doors. The apparatus can be fastened to the side or back of a wagon or to the wall of a building at a height convenient for the candler. If hung on hooks, it is easily removed.

This device consists of a wooden case (fig. 1) painted black inside and out, in which is mounted an inexpensive egg candle lighted by a tiny electric bulb operated by dry batteries.

The eggs are passed into the bottom part of the box through an opening protected by black cloth curtains that prevent light from entering (fig. 1, P). As the eggs are held and turned before the candle the collector can tell their quality by looking through the eyehole in the front of the case (fig. 1, O).

To Build Case.

The following directions and dimensions have been tested and found satisfactory in making these outfits:

Make a light wooden box, 26 inches high, 18 inches wide, and 10½ inches deep, inside measurements (fig. 1). This may be made from egg-case material, or a packing box may be cut down to these dimensions. Tongued-and-grooved boards should be used if possible, as the box must be light proof. Leave a space 11 inches high and the width of the box at the bottom of the front (fig. 1, P). Cut an eyehole 6 inches wide by 5 inches high in the top center of the front (fig. 1, O). When cut as shown, the hole is about the right distance above the candle to fit the height of an average man. Short men will prefer a lower hole and tall men may

require a higher box. Cover the egg opening with three pieces of heavy black cloth or oilcloth, making the centerpiece overlap those at the sides (fig. 1, P). Each piece is 7 or 8 inches wide and 11½ inches high. The side pieces are fastened to the case at the sides and top of the egg opening; the centerpiece at the top only.

Electrical Equipment.

Build stalls from thin lumber 3½ inches deep by 2½ inches square across the rear of the bottom of the box to hold the dry cells (fig. 2, A). This size box should hold six batteries, three for running the light and three in reserve.

The strips above, and resting on the tops of the cells (fig. 2, F), are not necessary unless it is desired to prevent the batteries from dropping out if the case is turned upside down. These strips should be screwed to the back of the cases so they may be easily removed when renewing the batteries.

The candling device proper is either automatic or constant; that is, it may be made to give light continuously or only when an egg is pressed lightly against it. Secure from any drug store a new round tin ointment box about 2 inches in diameter and ¾ inch deep (fig. 2, B). Ream a hole in the center of the bottom just large enough to hold firmly the screw of a small 3½-volt lamp, such as is used in a little pocket flash lamp.

The metal box, besides holding the lamp, also is needed to convey current to the screw around the stem of the bulb. Therefore do not ream the hole too large and do not use cloth or other nonmetallic packing to hold it in place around the stem of the bulb.

Cut a hole in the cover of the box 1 inch in diameter, against which the egg is held during candling.

To the bottom of the box solder one end of a strip of thin brass or steel 3½ inches long by ¾ inch wide. This forms the spring which breaks the contact when the candle is used automatically (fig. 2, C).

To the opposite side of the bottom solder a piece of metal to form a lip that passes under a button, which may be turned to hold the box firmly against the contacts when the candle is to give a continuous light.

Make the mounting board for the candle from a piece of wood 6 inches long, 2½ inches wide, and about ¼ inch thick, by boring a ½-inch hole through the center line 4 inches from one end. Tack over this hole, on the back of the board, a strip of zinc ¾ inch wide and 2¼ inches long, bearing a connecter that has been cut from a discarded dry battery (fig. 2, H). Bend the connecter end of the strip up at one edge of the board. Be careful to see that the ointment box can not touch this connecter or the zinc and thus make a short circuit. In candling, do not allow the hand to touch this connection and the metal box at the same time.

Mount the candling box on the face of the board by means of two round-head screws through the lower end of the spring (fig. 2, C) screwed at such a distance from the hole as will allow the end of the light bulb to pass through the ½-inch hole and come in contact with the zinc on the back. Care must be taken to see that the stem of the lamp goes straight into the hole. Only the metal contact point in the center of the stem should touch the zinc. If the metal screw plate around the outside of the stem touches the zinc, it will cause a short circuit and the lamp will not burn. The lower screw in the spring should have a close-fitting copper washer. Screw or nail the board to the middle of the back of the case so the light is 10 inches above the bottom.

Paint the case black inside and out.

Wiring.

Method 1.—Run one wire from the right of the batteries to the connecter (fig. 2, H) on the board. Fasten the second wire (from the left of the batteries) beneath the washer under the lower screw that holds the lamp spring (fig. 2, C). The device is then ready for operation.

Method 2.—If desired, a switch (fig. 1, S; also shown in fig. 2) may be mounted on the front of the box and one wire in the circuit (fig. 2, J) run through it. The operator, however, ordinarily will find it just as convenient to control the current by means of the button above the candle.

Connecting the Dry Cells.

Care should be taken to see that the batteries are connected in such a way that the voltage of the current is approximately that required by the lamp. If the voltage is too high, the lamp will burn out quickly; if too low, the light will be dim. Any dealer in dry batteries will have a voltmeter and can

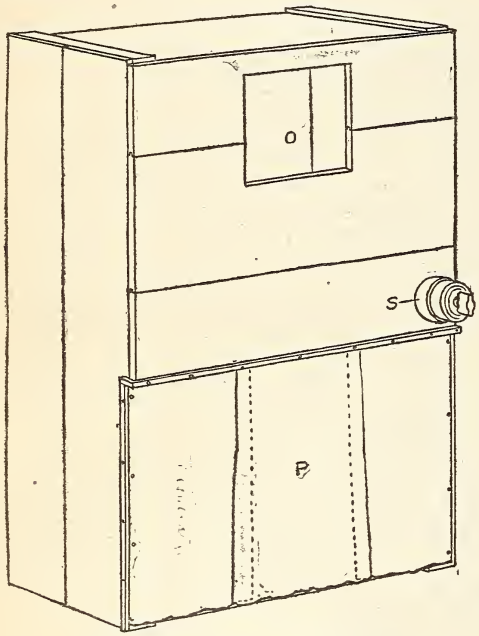


FIG. 1.—Exterior view of egg-candling device.

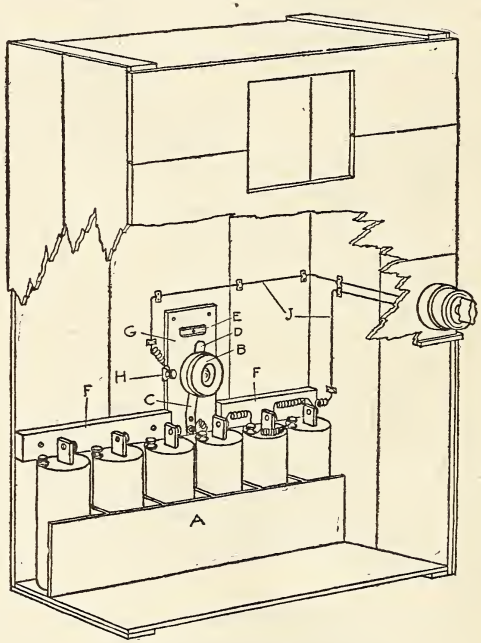


FIG. 2.—Sectional view of egg-candling device.

assist in connecting the cells so they will give the required voltage. If connected as shown in figure 2, the voltage from two cells only is applied to the light, which, nevertheless, has the benefit of the full amperage of the three cells.

If much candling is to be done, it is advisable to connect two sets of dry batteries to the candle, controlled by a three-way switch. Then the sets can be used alternately and their life greatly prolonged.

Simply holding an egg against the candling opening will press the contact in the stem of the bulb against the zinc contact on the back of the board, causing light to shine through the egg. When the pressure is removed, the contact is broken by the spring on the lamp box. If a constant light is desired, the contact may be made steady by turning the button (fig. 2, E) over the lip (fig. 2, D) on the back of the candle.

The materials for this apparatus, including three dry cells, should not cost over $1.50, itemized as follows:

Box for case	$0.10
Ointment box	.02
Spring	.05
Electric bulb	.10
3 batteries	1.05
Button	.02
Paint, nails, screws	.05
Cloth	.05
3 feet of wire for connecters	.06
Total	1.50

These items do not include the cost of a switch, which, if used, would increase the cost from 10 to 25 cents, depending on the type of switch used.

CAN FRUIT WITHOUT SUGAR.

Canning Specialists Say Boiling Water May Be Used Instead of Sirup.

Fruit for use in pies or salads or as stewed fruit can be put up or canned without the use of any sugar at all, according to the canning specialists of the department. They, therefore, advise those who, because of the high price of sugar, have been thinking of reducing the amount of fruit they put up, to can as much of their surplus as possible by the use of boiling water when sugar sirup is beyond their means. Any fruit, they say, may be successfully sterilized and retained in the pack by simply adding boiling water instead of the hot sirup. The use of sugar, of course, is desirable in the canning of all kinds of fruits and makes a better and ready sweetened product. Moreover, most of the fruits when canned in water alone do not retain their natural flavor, texture, and color as well as fruit put up in sirup. Fruit canned without sugar to be used for sauces or desserts must be sweetened.

Canning Fruits Without Sirup.

Can the product the same day it is picked. Cull, stem, or seed, and clean the fruit by placing it in a strainer and pouring water over it until it is clean. Pack the product thoroughly in glass jars or tin cans until they are full; use the handle of a tablespoon, wooden ladle, or table knife for packing purposes. Pour over the fruit boiling water from a kettle, place rubbers and caps in position, partially seal if using glass jars, seal completely if using tin cans. Place the containers in a sterilizing vat, such as a wash boiler with false bottom, or other receptacle improvised for the purpose. If using a hot-water bath outfit, process for 30 minutes; count time after the water has reached the boiling point; the water must cover the highest jar in container. After sterilizing remove packs, seal glass jars, wrap in paper to prevent bleaching, and store in a dry, cool place.

If you are canning in tin cans it will improve the product to plunge the cans quickly into cold water immediately after sterilization. When using a steam pressure canner instead of the hot-water bath, sterilize for 10 minutes with 5 pounds of steam pressure. Never allow the pressure to go over 10 pounds.

WATER FOR COWS.

All animals require plenty of good, pure water. This is especially true of the milking cow, as water constitutes more than three-fourths of the volume of milk. The water supply, therefore, demands the dairyman's most careful attention. Stale or impure water is distasteful to the cow and she will not drink enough for maximum milk production. Such water may also carry disease germs which might make the milk unsafe for human consumption or be dangerous to the cow herself. During the winter, when cows are stabled the greater part of the time, and unless arrangements have been made to keep water before them all the time, they should be watered two or three times a day. If possible, the water should be 15 or 20 degrees above the freezing point, and should be supplied at practically the same temperature every day. When water well above freezing temperature is stored in tanks and piped direct to the cow, there is probably little occasion for facilities to warm it; but when it stands in a tank on which ice often forms, it usually pays well to warm it slightly. This can be done by a tank heater, by live steam, or by hot water from a boiler. If a boiler is used for running a separator or for heating water to wash and sterilize utensils, steam from it can readily and cheaply be used to warm the water.—Farmers' Bulletin 743.

INFANTILE PARALYSIS.

Department Instructs Inspectors to Watch Interstate and Foreign Shipments for Fraudulent Remedies.

Officials of the department charged with the enforcement of the Food and Drugs Act expect that the outbreak of infantile paralysis will tempt unscrupulous persons to offer for sale so-called "cures" or remedies for this dread malady. They, therefore, have issued special instructions to the Food and Drug inspectors to be particularly alert for interstate shipments or importations of medicines the makers of which allege that they will cure or alleviate this disease, for which, at the present time, no medicinal cure is known. The officials also warn the public that any preparation put on the market and offered for sale as being effective for the treatment of infantile paralysis should be looked upon with extreme suspicion. Inspectors, accordingly, have been instructed to regard as suspicious and to collect samples of all medicines in interstate commerce for which such claims are made. Makers of such fraudulent remedies will be vigorously prosecuted whenever the evidence warrants action under the Sherley Amendment to the Food and Drugs Act. So-called remedies for infantile paralysis which are offered for import into the country will be denied entry.

The Food and Drugs officials are particularly watchful in this instance, because it has been noted in the past that whenever a serious epidemic exists unscrupulous dealers prey upon the fear or ignorance of the public by flooding the market with worthless, hastily prepared concoctions for which they assert curative properties which have no foundation whatever in fact. In the present instance inspectors already have discovered shipments of a few such mixtures.

The department will do everything it can under Federal law to protect that portion of the public which is extremely credulous in times of panic and which will grasp at anything which promises protection or relief. The sale of such products at this time, the officials point out, is particularly threatening to the public health because many persons, relying on the false statements of impostors, neglect to secure competent medical advice. As a result, not only is the safety of the patient endangered, but in the absence of proper sanitary precautions, the likelihood of contagion is greatly increased.

It must be understood, however, that the Federal Food and Drugs Act applies only to products which are shipped in interstate commerce, that is, from one State to another, or which are offered for import or export,

(*Continued on page 8.*)

ADULTERATION AND MISBRANDING OF THE SEED OF REDTOP.

Seed of redtop was secured during the calendar year 1915 in the open market, in accordance with the following paragraph in the act of Congress making appropriations for the Department of Agriculture:

"Where such samples (seeds of grasses, clover, or alfalfa and lawn grass seeds secured in the open market) are found to be adulterated or misbranded, the results of the tests shall be published, together with the names of the persons by whom the seeds were offered for sale."

In carrying out the provisions of this act, 620 samples of redtop seed were secured and analyses made under the direction of Mr. E. Brown, Botanist in charge of the Seed Laboratory, Bureau of Plant Industry, and publication is here made of the analyses of the samples found to be adulterated or misbranded, together with the names of the seedsmen by whom they were sold or offered for sale.

Of the 620 samples obtained as redtop seed, 193, or over 31 per cent, were found to be adulterated or misbranded through being mixtures of redtop and timothy seed. When redtop seed was last collected in 1913 less than 20 per cent of the samples were found to be adulterated or misbranded. During the spring of 1915 there was a difference of $0.25 or more per pound between the price of the best grades of redtop and timothy seed. This unusual difference in price, no doubt, accounts largely for the increased proportion of adulterated or misbranded redtop seed sold in 1915 as compared with that sold in 1913.

Results of tests of samples of seed obtained in the open market as redtop seed and found to be adulterated or misbranded.

Seed offered for sale or sold as redtop seed by—		Seed obtained by—	Seeds and inert matter found upon analysis of samples.			
Name of dealer.	Address.		Redtop seed.	Timothy seed.	Other seeds.	Dirt and chaff.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Andrews, Jim, jr.	Columbia, Tenn.	Mail (sample)	53.69	16.40	4.89	25.02
Do	do	do	73.82	10.04	1.28	14.86
Do	do	do	81.18	12.36	.66	5.80
Do	do	Purchase (bulk)	71.50	10.63	2.22	15.65
Archias's Seed Store.	Sedalia, Mo	Mail (sample)	82.10	7.99	1.15	8.76
Do	do	Purchase (bulk)	63.80	22.30	1.16	12.74
Barber & Bro	Birmingham, Ala.	Mail (sample)	59.58	25.82	1.82	12.78
Do	do	Purchase (bulk)	59.85	24.81	1.89	13.45
Barrett Co., The W. E.	Providence, R. I.	Mail (sample)	79.49	6.68	2.19	11.64
Do	do	Purchase (bulk)	78.10	6.00	3.14	12.76
Barteldes Seed Co.	Oklahoma City, Okla.	Mail (sample)	61.12	16.15	3.29	19.44
Do	do	Purchase (bulk)	65.71	11.88	1.82	20.59
Do	Lawrence, Kans.	Mail (sample)	59.81	16.94	3.31	19.94
Do	do	do	55.65	29.69	1.15	13.51
Do	do	Purchase (bulk)	62.30	15.48	2.47	19.75
Do	Denver, Colo	Mail (sample)	60.38	17.51	2.97	19.14
Do	do	Purchase (milk)	66.08	13.14	2.55	18.23
Bash & Co., S	Fort Wayne, Ind.	Mail (sample)	56.85	11.61	4.91	26.63
Do	do	Purchase (bulk)	56.36	11.76	3.80	28.08
Beckert's Seed Store.	Pittsburgh, Pa	do	60.52	22.61	2.15	14.72
Bellis & Son, L. B.	Clinton, N. J	Mail (sample)	73.39	7.30	3.36	15.95
Do	do	Purchase (bulk)	71.79	8.13	4.02	16.06
Blackman & Griffin Co.	Ogden, Utah	Mail (sample)	61.53	17.29	2.28	18.90
Do	do	Purchase (bulk).	60.53	17.64	2.14	19.69
Brent, C. S	Lexington, Ky	Mail (sample)	67.51	12.36	4.96	15.17
Do	do	Purchase (bulk).	81.30	11.83	.10	6.77
Brown Seed & Implement Co.	New Albany, Ind.	Mail (sample)	49.56	8.92	3.40	38.12
Do	do	Purchase (bulk).	51.44	8.94	3.37	36.25
Busch, W. J	Lawrence, Kans.	Mail (sample)	69.50	12.14	1.18	17.18
Do	do	Purchase (bulk).	76.29	9.61	1.34	12.76
Bushnell & Co., D. I.	St. Louis, Mo	Mail (sample)	68.20	15.80	4.22	11.78
Do	do	Purchase (bulk).	57.76	26.34	2.01	13.89
Casler, Wm	Louisville, Ky	Mail (sample)	84.44	7.59	1.03	6.94
Do	do	do	70.68	16.26	2.44	10.62
Do	do	do	62.27	15.81	6.01	15.91
Do	do	Purchase (bulk).	83.29	7.65	1.32	7.74

Results of tests of samples of seed obtained in the open market as redtop seed and found to be adulterated or misbranded—Contd.

Seed offered for sale or sold as redtop seed by—		Seed obtained by—	Seeds and inert matter found upon analysis of samples.			
Name of dealer.	Address.		Redtop seed.	Timothy seed.	Other seeds.	Dirt and chaff.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Chapman & Brooks Co.	Springfield, Mass.	Purchase (bulk).	63.08	10.57	5.85	20.50
Charleston Nursery & Seed Co.	Charleston, W. Va.	Mail (sample)	76.54	13.04	1.95	8.47
Do	do	Purchase (bulk).	76.44	11.15	2.31	10.10
Chesmore Eastlake Merc. Co.	St. Joseph, Mo	Mail (sample)	71.22	11.12	2.93	14.73
Do	do	Purchase (bulk).	66.28	14.67	3.31	15.74
City Feed Co	Pine Bluff, Ark	Mail (sample)	66.52	7.50	4.78	21.20
Do	do	Purchase (bulk).	68.15	7.65	3.19	21.01
Condon Bros	Rockford, Ill	Mail (sample)	81.10	5.15	.96	12.79
Do	do	Purchase (bulk).	75.56	8.68	.31	15.45
Cumberland Seed Co.	Cumberland, Md	Mail (sample)	72.14	9.13	3.68	15.05
Do	do	Purchase (bulk).	75.10	10.77	2.40	11.73
Farber Seed Co	St. Joseph, Mo	Mail (sample)	46.24	10.07	7.03	36.66
Do	do	Purchase (bulk)	47.49	15.96	5.91	30.64
Farquhar & Co., R. & J.	Boston, Mass	Mail (sample)	39.62	7.24	1.24	51.90
Do	do	Purchase (bulk).	60.39	8.06	.29	31.26
Flower & Co., S. W.	Toledo, Ohio	Mail (sample)	79.27	7.04	2.02	11.67
Do	do	Purchase (bulk).	78.15	9.84	1.97	10.04
Frost, David C	Lexington, Ky	Mail (sample)	69.68	6.94	3.99	19.39
Do	do	Purchase (bulk).	73.95	6.03	3.45	16.57
German Nurseries and Seed House.	Beatrice, Nebr	Mail (sample)	65.03	15.03	2.06	17.88
Do	do	Purchase (bulk).	63.32	14.33	2.29	20.06
Godden Seed & Grain Co., Amzi.	Birmingham, Ala.	Mail (sample)	53.86	10.99	6.34	28.81
Do	do	Purchase (bulk).	68.63	7.16	5.19	19.02
Grout, Chas. F	Ogden, Utah	Mail (sample)	60.64	18.10	2.14	19.12
Do	do	Purchase (bulk).	60.98	15.61	2.21	21.20
Hall Seed Co	Louisville, Ky	Mail (sample)	71.78	10.96	3.49	13.77
Do	do	Purchase (bulk).	71.81	11.43	4.38	12.38
Hardin, Hamilton & Lewman.	do	Mail (sample)	58.16	16.94	3.31	21.59
Do	do	Purchase (bulk).	60.07	15.20	3.34	21.39
Heldt Co., The	Evansville, Ind.	Mail (sample)	72.50	13.56	1.32	12.62
Do	do	do	75.41	10.55	1.57	12.47
Do	do	Purchase (bulk)	64.30	25.68	1.27	8.75
Henry & Missert	Buffalo, N. Y	Mail (sample)	18.59	7.59	2.31	71.51
Do	do	Purchase (bulk).	16.32	6.68	2.29	74.71
Hitchcock & Son, L. H.	Nashville, Tenn.	Mail (sample)	55.59	15.28	8.79	20.34
Do	do	Purchase (bulk).	53.83	14.75	9.20	22.22
Hoermann's Seed Store.	Terre Haute, Ind.	Mail (sample)	19.69	15.79	4.97	59.55
Do	do	Purchase (bulk).	24.09	16.47	5.30	54.14
Holmes Seed Co	Harrisburg, Pa	Mail (sample)	30.00	18.52	1.20	50.28
Do	do	Purchase (bulk).	29.66	18.83	1.36	50.15
Hubbard's Seed House.	Topeka, Kans	Mail (sample)	64.84	14.01	2.25	18.90
Do	do	Purchase (bulk).	84.95	6.23	1.06	7.76
Imlay Co., The	Zanesville, Ohio	Mail (sample)	80.49	7.09	2.23	10.19
Do	do	Purchase (bulk).	80.37	7.13	2.34	10.16
Inland Seed Co	Spokane, Wash.	Mail (sample)	44.43	7.88	5.03	42.66
Do	do	Purchase (bulk).	45.72	7.78	4.28	42.22
Jenness, C. L	Dover, N. H	Mail (sample)	59.01	15.84	2.47	22.68
Do	do	Purchase (bulk).	61.04	16.39	3.28	19.29
Jacot & Mullen	New York, N. Y.	Mail (sample)	23.06	13.23	1.99	61.72
Do	do	Purchase (bulk).	21.84	8.91	2.26	66.99
Keyser, Paul	San Francisco, Cal.	Mail (sample)	20.60	12.86	4.06	62.48
Do	do	Purchase (bulk).	29.01	12.78	4.99	53.22
Lee, Arthur G	Fort Smith, Ark.	Mail (smaple)	70.05	6.31	4.53	19.11
Do	do	Purchase (bulk).	65.96	6.87	5.51	21.66
Livingston Seed Co.	Columbus, Ohio.	Mail (sample)	57.45	6.49	7.53	28.53
Do	do	Purchase (bulk).	57.84	12.57	8.26	21.33
Louisville Seed Co.	Louisville, Ky	Mail (sample)	71.47	13.83	3.17	11.53
Do	do	do	63.81	14.09	6.06	16.04
Do	do	Purchase (bulk).	61.00	14.93	6.09	17.98
Lynchburg Seed Co.	Lynchburg, Va.	do	60.69	29.05	2.40	7.86
McCullough's Sons Co., J. M.	Cincinnati, Ohio	Mail (sample)	78.94	7.79	2.31	10.96
Do	do	do	64.32	13.04	4.31	18.33
Do	do	Purchase (bulk).	78.12	6.39	2.20	13.29
McKay, Reece & Co.	Nashville, Tenn.	Mail (sample)	71.55	6.76	3.42	18.27
Do	do	do	68.46	6.92	3.47	21.15
Do	do	do	50.73	12.80	6.11	30.36
Do	do	Purchase (bulk).	69.64	7.15	3.43	19.78
May & Son, W. H.	Alexandria, Va	Mail (sample)	68.82	10.20	3.56	17.42
Do	do	Purchase (bulk).	71.13	12.79	2.32	13.76
Mayo, D. R	Knoxville, Tenn	Mail (sample)	50.62	41.51	1.25	6.62
Do	do	Purchase (bulk).	52.31	39.40	1.05	7.24
Mangelsdorf Bros. Co.	Atchison, Kans.	Mail (sample)	60.29	18.46	1.93	19.32
Do	do	Purchase (bulk).	66.54	16.17	1.96	15.33
Miller, W. A	Lynchburg, Va	do	63.57	25.81	2.08	8.54
Missouri Seed Co.	Kansas City, Mo.	Mail (sample)	77.93	12.81	1.28	7.98
Do	do	Purchase (bulk).	58.41	35.56	.20	5.83

Results of tests of samples of seed obtained in the open market as redtop seed and found to be adulterated or misbranded—Contd.

Seed offered for sale or sold as redtop seed by—		Seed obtained by—	Seeds and inert matter found upon analysis of samples.			
Name of dealer.	Address.		Redtop seed.	Timothy seed.	Other seeds.	Dirt and chaff.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Morse & Co., C. C.	San Francisco, Cal.	Mail (sample)	25.46	16.65	4.16	53.73
Do	do	Purchase (bulk)	27.52	14.05	5.14	53.29
Nebraska Seed Co.	Omaha, Nebr	Mail (sample)	64.33	13.75	1.25	20.67
Do	do	do	59.81	17.06	2.09	21.04
Do	do	do	57.54	16.97	3.27	22.22
Do	do	Purchase (bulk)	64.47	17.34	1.23	16.96
Do	do	do	64.36	17.63	1.36	16.65
Nungesser-Dickinson Seed Co.	New York, N.Y.	Mail (sample)	75.09	16.19	1.90	6.82
Do	do	do	66.28	11.74	2.52	19.46
Do	do	Purchase (bulk)	72.76	15.43	2.19	9.62
O. K. Seed Store	Indianapolis, Ind	Mail (sample)	63.98	23.55	3.44	9.03
Do	do	Purchase (bulk)	65.25	20.90	4.05	9.80
Peppard Seed Co., J. G.	Kansas City, Mo.	Mail (sample)	78.88	10.04	1.99	9.09
Do	do	do	62.66	16.07	.38	20.89
Do	do	Purchase (bulk)	82.77	7.86	1.23	8.14
Perry, Willford	Provo, Utah	Mail (sample)	74.02	7.86	2.50	15.82
Do	do	Purchase (bulk)	73.64	7.19	2.49	15.68
Pioneer Seed Co.	Denver, Colo	Mail (sample)	66.92	14.55	2.04	16.49
Do	do	Purchase (bulk)	66.95	13.81	2.10	17.14
Pittsburg Elevator.	Pittsburg, Kans.	Mail (sample)	55.64	34.77	1.13	8.46
Do	do	Purchase (bulk)	51.30	40.07	.93	7.70
Rapier Grain & Seed Co.	Owensboro, Ky.	Mail (sample)	57.60	9.20	3.67	29.53
Do	do	Purchase (bulk)	54.13	8.06	6.97	30.84
Reding & Clark	Joplin, Mo	Mail (sample)	66.60	9.72	1.32	22.36
Do	do	Purchase (bulk)	65.89	9.65	2.13	22.32
Reeves Co., Robert C.	New York, N.Y.	Mail (sample)	64.39	12.88	2.05	20.68
Do	do	Purchase (bulk)	68.74	8.06	3.20	20.00
Riese, Henry A	Bloomington, Ill.	Mail (sample)	71.54	17.81	1.36	9.29
Do	do	Purchase (bulk)	72.05	17.38	1.73	8.84
Rudy-Patrick Seed Co.	Kansas City, Mo.	Mail (sample)	70.21	11.57	1.90	16.32
Do	do	Purchase (bulk)	65.08	17.85	1.16	15.91
Salzer Seed Co., John A.	La Crosse, Wis	Mail (sample)	30.11	17.52	6.57	45.80
Do	do	Purchase (bulk)	45.63	13.59	2.39	38.39
Savage & Son, N. R.	Richmond, Va	Mail (sample)	61.47	16.94	2.03	19.56
Do	do	Purchase (bulk)	63.04	14.90	2.06	20.00
Schisler-Corneli Seed Co.	St. Louis, Mo	Mail (sample)	67.48	8.93	1.94	21.65
Do	do	Purchase (bulk)	70.80	8.26	1.25	19.69
Schwill & Co., Otto.	Memphis, Tenn.	Mail (sample)	42.76	17.66	5.12	34.46
Do	do	Purchase (bulk)	47.45	13.99	6.03	32.53
Scobie & Parker Co.	Pittsburgh, Pa	Mail (sample)	73.85	12.88	2.21	11.06
Do	do	Purchase (bulk)	70.49	17.01	2.16	10.34
Scott & Co., Wm.	Newport, R. I	Mail (sample)	72.95	8.01	.57	18.47
Do	do	Purchase (bulk)	73.57	6.96	1.13	18.34
Seattle Seed Co	Seattle, Wash	Mail (sample)	41.52	21.24	2.38	34.86
Do	do	Purchase (bulk)	36.61	19.36	9.06	34.97
Slate Seed Co	South Boston, Va.	Mail (sample)	47.21	20.92	7.14	24.73
Do	do	Purchase (bulk)	48.79	18.62	7.28	25.31
Sluis Seed Store	Chicago, Ill	Mail (sample)	58.58	12.84	4.23	24.35
Do	do	Purchase (bulk)	61.69	6.74	5.29	26.28
Smith Bros. Seed Co.	Auburn, N. Y	Mail (sample)	76.80	15.73	.29	7.18
Do	do	Purchase (bulk)	76.79	15.77	.29	7.15
Southern Seed Co.	Louisville, Ky	Mail (sample)	75.41	14.56	.19	9.84
Do	do	Purchase (bulk)	73.64	16.16	.77	9.43
Do	do	Mail (sample)	70.67	20.28	.38	8.67
Do	do	Purchase (bulk)	73.99	16.60	.39	9.02

Results of tests of samples of seed obtained in the open market as redtop seed and found to be adulterated or misbranded—Contd.

Seed offered for sale or sold as redtop seed by—		Seed obtained by—	Seeds and inert matter found upon analysis of samples.			
Name of dealer.	Address.		Redtop seed.	Timothy seed.	Other seeds.	Dirt and chaff.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Southwestern Seed & Floral Co.	Fayetteville, Ark.	Mail (sample)	61.12	10.74	3.96	24.18
Do	do	Purchase (bulk)	62.43	13.47	4.69	19.41
Studabaker Grain & Seed Co.	Bluffton, Ind	Mail (sample)	75.24	8.06	1.26	15.44
Do	do	Purchase (bulk)	75.29	8.91	1.91	13.89
Thorn & Gwin	New Albany, Ind	Mail (sample)	66.29	13.22	5.59	14.90
Do	do	Purchase (bulk)	57.30	17.04	4.03	21.63
Tucker-Mosby Seed Co.	Memphis, Tenn.	Mail (sample)	54.97	29.71	3.06	12.26
Do	do	do	58.35	26.31	1.65	13.69
Do	do	do	50.24	35.64	2.50	11.62
Do	do	Purchase (bulk)	53.20	31.04	2.45	12.71
Valley Seed Co	Sacramento, Cal.	Mail (sample)	24.49	17.72	4.16	53.63
Do	do	Purchase (bulk)	26.97	16.67	3.95	52.41
Western Seed & Grain Co.	Boise, Idaho	Mail (sample)	71.08	5.86	2.83	20.23
Do	do	Purchase (bulk)	69.07	8.43	1.79	20.71
Whitney-Noyes Co., The.	Buffalo, N. Y	Mail (sample)	71.61	12.51	4.04	11.84
Do	do	Purchase (bulk)	77.92	11.79	3.12	7.17
Wood-Curtis Co	Sacramento, Cal.	do	51.74	16.83	3.67	27.76
Wood, Stubbs & Co.	Louisville, Ky	Mail (sample)	80.59	7.77	.28	11.36
Do	do	Purchase (bulk)	50.67	40.17	1.24	7.92
Do	do	Mail (sample)	70.51	19.41	1.15	8.93
Do	do	do	72.16	7.09	2.59	18.16
Do	do	Purchase (bulk)	47.56	42.56	2.94	7.14
Wood & Sons, F. J.	London, Ohio	Mail (sample)	71.35	6.73	2.31	19.61
Do	do	Purchase (bulk)	72.18	7.57	3.88	16.37
Younkerman Seed Co.	Council Bluffs, Iowa.	Mail (sample)	41.27	30.69	7.94	20.10
Do	do	Purchase (bulk)	36.31	38.06	7.86	17.77

The Department of Agriculture will continue to examine and report promptly as to the presence of adulterants and dodder in any sample of seed submitted for that purpose. According to the location of the sender, these samples may be submitted to the Seed Laboratory at Washington, D. C., or to any of the following laboratories maintained through the cooperation of this department: Branch Seed-Testing Laboratory, Agricultural Experiment Station, Columbia, Mo.; Branch Seed-Testing Laboratory, Agricultural Experiment Station, Baton Rouge, La.; Branch Seed-Testing Laboratory, Oregon Agricultural College, Corvallis, Oreg.; Branch Seed-Testing Laboratory, Purdue University, La Fayette, Ind.; Branch Seed-Testing Laboratory, California Agricultural Experiment Station, Berkeley, Cal.

WM. A. TAYLOR,
Chief, Bureau of Plant Industry.

Approved:
CARL VROOMAN,
Acting Secretary of Agriculture.
WASHINGTON, D. C., *July 31, 1916.*

BANKERS AID CATTLE INDUSTRY.

The part that banks can play in promoting the local cattle industry is illustrated by the action taken recently by a group of southern bankers. A few farmers in Gibson County, Tenn., started a movement looking toward diversification of crops by raising less cotton and increasing the number and quality of cattle. The movement was encouraged by the beef-cattle extension agents of the State college and the United States Department of Agriculture. All the banks in the county grew interested, and as soon as the group was ready to bring in a car of pure-bred cattle the bankers agreed to lend up to $15,000 to defray the cost.

Sixty-five head, including bulls, bred heifers, and cows with calves at foot, were delivered in the county, all in good condition, at an average cost of $150 per head, exclusive of the calves. These were distributed to individual farmers, not more than three head going to any farm. The owners then either paid for the cattle or gave long-time notes at reduced interest to the banks. One bank acted as agent in the transaction for all the banks in the county.

The bankers figured that by helping the farmers to buy a large number of pure-bred cattle they not only would get interest on safe loans but would foster an industry the benefits of which would be accumulative and permanent in the locality. This is borne out by frequent experiments which have established that even a few good bulls introduced in a county soon have a marked influence on the size and quality of all local cattle.

The dairy cow requires an ounce or more of salt a day, and while she should be given all she needs, she should not be forced to take more than she wants. It is best, therefore, to give only a small quantity on the feed, and to place rock salt in boxes in the yard.—Farmers' Bulletin 743.

SPOTTED BUR CLOVER.

Cheapest Winter Cover Crop for Southern States—Reseeds Itself Indefinitely in Pastures.

Bur clover is the cheapest legume that will serve in the South as a winter cover crop and prevent the washing of soil. The southern or spotted variety is the one best adapted to conditions over the larger part of this area.

Among the special advantages of bur clover is the fact that good stands can often be obtained from year to year without additional seeding. When once established on pasture lands bur clover will reseed itself indefinitely, provided the plants are allowed to mature some seed at least every other year. Its use has also resulted in many instances in materially increasing the yield of cotton. Farmers' Bulletin 693 of the department gives directions for inoculating the land and sewing the seed, and suggests rotations in which bur clover may be used to advantage.

Directions for Sowing the Seed.

Bur clover should always be sown in late summer or fall. In the cotton States the best time for seeding is the month of September, but it may be seeded in August, and seedings as late as October often give favorable results, even as far north as South Carolina. Seedings later than October, however, are to be avoided whenever possible, as but little fall and winter growth is usually secured from such plantings.

When the seed is sown in the bur, broadcasting is the only practicable method. To obtain a full stand by this method, from 3 to 6 bushels of seed per acre are necessary. After sowing, a light harrowing should be given. In the regions, however, which are well adapted to bur clover, it is much more economical as a rule to begin with a light seeding and to depend in subsequent years on the volunteer crop when this is practicable.

Inoculation Advisable in South.

In the cotton States lack of inoculation apparently has often been the cause of failure in establishing bur-clover crops, especially when hulled seed was sown. Usually when seed is sown in the bur there are enough bacteria in the dust on the burs to insure inoculation. It is desirable, however, in planting bur clover for the first time that farmers do not go to the expense of purchasing a large quantity of seed, but that they plant a comparatively small area, inoculating the soil either by the soil-transfer method or, in the absence of inoculated soil, by the use of pure cultures. When once a patch of bur clover has been grown successfully on a farm the whole farm can easily be inoculated by scattering soil from the places where the bur clover grew successfully.

Bur clover may be used as a winter crop in rotation with any cultivated summer crop. Among rotations that have been suggested the following seem desirable:

First year: Cotton; bur clover sown between the rows September 1.

Second year: Corn or soy beans, followed by bur clover.

Third year: Cotton.

A less simple rotation is the following:

First year: Cotton; bur clover sown between the rows September 1.

Second year: Corn, followed by winter oats.

Third year: Oats, followed by soy beans or cowpeas, preferably in rows. Bur clover sown in the rows September 1. If the soy beans or cowpeas are broadcasted, the bur clover should not be sown before the crop is harvested.

Fourth year: Cotton.

After bur clover has been once successfully grown, stands can usually be secured in such intertilled summer crops as cotton, corn, soy beans, or sorghums. In broadcasted crops, however, such as soy beans, millet, and cowpeas, the shade is so dense that the young bur-clover plants for the most part perish.

STERILIZER FOR DAIRY.

(*Continued from page 1.*)

fits tightly. The first steam that comes from the apparatus will have a temperature of about 140° F. Wait until a thermometer placed in the outlet pipe shows at least 205° F. Then place the milk can—previously washed and rinsed—inverted over the steam outlet and resting on the ridges. Sterilize for 5 minutes; remove, shake out any water, and place the can upright on the floor. The can should be absolutely dry in 1 or 2 minutes. If not, it is an indication either that the steam was not hot enough or that the can was not washed clean. Remember that the steaming does not remove dirt, so that previous washing is essential.

In winter or in cold rooms an insulating cover for the milk can is desirable, since otherwise the can may be cooled so quickly that it will not dry thoroughly. An insulated cover that will serve this purpose can be made from a blanket.

Sterilize the milk-receiving tank and separator parts and all milk pails in the same way and for the same time.

Before strainer cloths, separator parts, can covers, and small utensils can be sterilized it is necessary to provide a bottomless, galvanized-iron box 15 by 15 by 11 inches high, to be used as a sterilizing chamber. The four sides of the box should fit tightly into the shallow pan and the box itself should be provided with a tightly fitting metal cover equipped with a handle.

To handle strainer cloths, string a wire across one side three-fourths inch from the top and one-half inch from the side. Before placing the box in position, hang the strainer cloth on the wire, folding it so that one edge may be reached easily without handling the entire cloth. Set the can covers upright along the sides of the box inside, with the tops of the covers against the box. The box should hold 3 covers at one time.

After Sterilizing.

After steaming, place covers on cans as soon as both are dry and do not remove until the cans are to be filled with milk. The pails, as well as the tank and separator parts, should be kept always in a clean place, out of reach of dust.

SUGAR SIRUPS FOR CANNING.

For the accurate determination of the density of sirup a density gauge is required, but for ordinary home canning such an instrument is not necessary. The recipes for canning fruit furnished by the office in charge of club work for the Northern and Western States specify sirups of certain percentages, which are also termed thin, medium-thin, medium-thick, or thick sirups. Sirups suitable for canning purposes and approximately of the density required may be made as follows:

The formula much used in the West for sirup is 3 quarts of sugar to 2 quarts of water, boiled to a thin, medium-thin, medium-thick, or thick sirup. The formula sometimes called the Eastern formula is 3 quarts of water to 2 quarts of sugar, boiled to a thin, medium-thin, medium-thick, or thick sirup.

Thin sirup is sugar and water boiled sufficiently to dissolve all sugar, but is not sticky. Thin sirups are used for all sweet fruits that are not too delicate in texture and color, such as cherries, peaches, apples, etc.

Medium-thin sirup is that which has begun to thicken and becomes sticky when cooled on the finger tip or spoon. Medium-thin sirups are used in the canning of the medium-sweet fruits, such as blackberries, currants, dewberries, huckleberries, raspberries, etc.

Medium-thick sirup is that which has thickened enough to roll or pile up over the edge of a spoon when you try to pour it out. Medium-thick sirups are used in the canning of all sour fruits, such as gooseberries, apricots, sour apples, etc., and delicately colored fruits, such as strawberries and red raspberries.

Thick sirup is that which has become so thick that it is difficult to pour out of a spoon or container (not sugared). Thick sirup is used in preserving and in making all kinds of sun preserves.

WINTER DAIRYING PAYS.

Significant Facts Revealed by Records of Cow-Testing Association in Northwestern States.

When asked why they preferred to have all their cows freshen in the spring, a number of farmers in a Northwestern State said positively that winter dairying did not pay in that section. The agent of the cow-testing association, therefore, investigated a number of farms to determine whether it was the best practice in that region to have cows freshen in the spring because there is then plenty of grass, and "grass is a cheap feed." He found that the spring-freshened cows gave milk for a time while the pasture was good, but as hot weather and flies came on, the flow gradually decreased until by fall they usually were dry. As the owners thought it did not pay to feed a dry cow, the cows were allowed to browse around all the fall, picking up what feed they could, and in many cases they were forced to "rustle" around the straw pile all winter. As a result, in the spring many cows emerged with ribs showing and were considerably weakened by the time they freshened. They therefore got a poor start in the season, and in many cases their milk records the following year were still lower. It was not surprising, the agent points out, that the average cow, so mishandled, could produce only about 150 pounds of butter fat a year.

Many so-called scrub cows, the agent points out, if freshened in the fall and given the right kind of feed and treatment during the winter before coming on grass for the latter part of their lactation period would prove to be money makers. This opinion seems to be supported fully by the records of the cow-testing association in the same general locality. These records show that the average farm cow that freshens in the fall not only produces more milk and fat, but also is more profitable to keep. In one county many cows which freshened in the fall won a place on the association's honor list for January and continued to produce heavily during the winter. When grass came in the spring these same cows picked up their naturally waning milk flow and finished up with a good yearly production before going dry late in summer. What is still more important, however, from the profit point of view, is that the fall-freshened cows produced the larger part of their records while milk prices were best. With the common idea that "grass is a cheap feed," therefore, this agent would couple the fact that "butter fat is usually cheap at the same time."

The highest January record of this association was made by a cow which produced 1,730 pounds of milk, or approximately 200 gallons, 3.7 per cent test, or 64 pounds of butter fat. Her milk, however, was sold on a city milk route and brought 20 cents a gallon, or approximately $40 for the month. On the other hand, if the owner had sold his product on a butter-fat basis he still would have received $19.20. As it cost him $5.37 to feed the cow, his profit on a butter-fat basis would have been $13.83.

On this farm the cows get practically all the alfalfa hay and corn silage that they will eat up clean, and in addition a grain mixture of equal parts of rolled oats, bran, and shorts. Each of the heavier producers gets about ten pounds of this mixture daily. In addition to being well fed, the cows stand comfortably sheltered in a warm barn most of the time and have access to plenty of good water.

During the month six cows in this herd averaged 54.8 pounds of butter fat, worth more than $16, while the feed cost was approximately $5.37 apiece. The records kept by the cow tester gave the dairyman exact knowledge of the cost of feed and production in the case of each animal, and thus enabled him to cull out "boarders" and regulate his feed in proportion to the milk production of each cow. The association record for the farmer, however, seemed to establish the fact that, in the region mentioned, winter dairying can be made to pay.

SCHOOL-CREDIT PROJECTS.

Farm Work as Part of Elementary and High School Courses in Agriculture.

The idea that certain practical work done by boys and girls on the farm should count as credits in the agricultural courses of the rural elementary and high schools is growing rapidly in popularity among educators. The basis for this idea is the belief that the farm may and should become the logical laboratory for testing out and putting into practice much that is taught in the schools, and that the schools by giving credit for home work can and should encourage boys and girls to make profits for themselves or to become more directly helpful to their families. Educators, however, find some difficulty in defining just what work that the boy does on the farm should receive an educational credit and how many credits should be allotted for the different kinds of work which really help the boy to master progressive methods.

To assist the superintendents of schools and teachers, the specialists in agricultural education in the States Relations Service have recently published Department Bulletin 385, School Credit for Home Practice in Agriculture. This bulletin, which may be had free by educators as long as the department's supply lasts, devotes a number of pages to tables and examples showing the nature of school credit projects and the amount of credit to be granted. It is recognized, however, that real cooperation on the part of the parent is essential, and the author thus defines the part the parent must play in any plan for making school and farm work closer together in the interests of agricultural education.

The parent should agree: (1) To permit the pupil to use specified land, animals, and equipment, either as a temporary owner or as a tenant so far as the needs of the project are concerned; (2) to grant the pupil the time needed for the work and to verify and vouch for the time record; (3) to instruct the pupil in the necessary manipulation so far as practicable; (4) to allow the pupil the profits derived from his own labor and management. The last point is not always feasible, particularly where the pupil takes up one phase of the main business of the farm, such as the weighing and testing of milk for a dairy herd.

The parent must at least give an unbiased voucher of the time and expense record, and a statement that the project work was all done by the pupil. In the absence of an advisory committee or an inspector, the parent is the judge as to when the pupil has accomplished a task successfully.

Where the pupil's time is much needed by the parent in regular home duties it may be well to advise that the pupil take over some part of that home work as a project. This will insure the cooperation of the parents, although the "managerial" income may not come to the pupil.

The school should not only give credit for work for which the pupil receives pay, but should consider the relative income or profit as one important factor in determining the school rank given on the project.

To insure success, it will be very desirable to have a memorandum of agreement signed by all parties before the project begins, a report in full from the pupil, and a voucher from the parent at the end.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

QUARANTINE LIFTED.

Restriction on Five Illinois Counties Because of Traffic in Tubercular Cattle Is Removed.

The counties of Lake, McHenry, Kane, Dupage, and Cook, in the State of Illinois, have been released from quarantine for tuberculosis in cattle by an order signed by the Secretary of Agriculture July 19, 1916, effective August 1, 1916. These counties were the only portions of the State under quarantine.

This order revokes the quarantine placed upon these counties by an order signed August 22, 1914, and effective October 1, 1914. This quarantine prevented the interstate shipment from the quarantined area of cattle, for any purpose other than immediate slaughter, unless the cattle had been tested with tuberculin by, or under the supervision of, a Bureau of Animal Industry inspector and were accompanied by a Bureau of Animal Industry certificate, including a tuberculin test chart, showing the cattle to be free from the disease.

This quarantine was placed at the request and with the cooperation of the State Live Stock Sanitary Commission of Illinois, in order that the interstate movement might be prevented of breeding and dairy cattle which in numerous instances were found to be affected with tuberculosis on arrival in other States. This condition was brought about by the fact that Illinois did not have a law providing for the tuberculin test of cattle shipped either into or out of the State.

In the absence of such a law, certain persons in Illinois were able to make a business of buying up cattle in Illinois and elsewhere which the tuberculin test showed were infected and shipping these cattle throughout the country. This trade grew to considerable proportions. The men engaged in it operated in the five counties which were quarantined, and the cooperation of the United States Department of Agriculture and the Illinois State authorities has resulted in stopping the traffic in reacting cattle from those counties.

Prior to the time the five counties in Illinois were placed under quarantine, a number of States refused to receive breeding or dairy cattle from any portion of Illinois unless accompanied by a Bureau of Animal Industry certificate of inspection and tuberculin test. In order to protect cattle in other States, as well as in other counties in Illinois, from this disease, the department placed in quarantine the five counties in which it was found that most of the diseased animals originated.

The purpose of the original quarantine has now been met. The State of Illinois now has a law enabling the State authorities to control the local situation, and there appears to be no further necessity for the Federal quarantine.

The Illinois law prohibits the movement into that State of breeding and dairy cattle over 9 months of age unless accompanied by a certificate of health, supported by a tuberculin test chart issued by the State veterinarian, assistant State veterinarian, or a Bureau of Animal Industry veterinary inspector, showing the animals to be free from tuberculosis.

The action of the department in revoking this quarantine should not be construed as indicating that the control of tuberculosis in cattle is not possible by means of proper sanitary and quarantine measures.

The action of the department has been taken after consultation with live-stock sanitary authorities in other States which had quarantined against Illinois, and 11 of these States have expressed their approval of the action taken by the department. The revocation of this quarantine was approved by the Advisory Committee on Live Stock Sanitary Affairs recently appointed by Secretary Houston.

INFANTILE PARALYSIS.

(*Continued from page 3.*)

or which are manufactured or sold within a Territory or the District of Columbia. Products which are made and consumed wholly within a single State are subject only to such State laws as may apply and are under the control only of State health officials. The Federal law does not apply, for instance, to patent medicines made within the State of New York and sold in New York City. Persons buying or using a "remedy" made in their own State, therefore, must rely on the protection accorded them by their local health authorities.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Secretary of Agriculture, DAVID F. HOUSTON.
Executive and administrative head of the department.

Assistant Secretary of Agriculture, CARL VROOMAN.
Assists in directing the work of the department. In the absence of the Secretary becomes Acting Secretary.

Solicitor, FRANCIS G. CAFFEY.
Is legal adviser to the Secretary and the heads of the several branches of the department, conducts its legal work, and represents it in all legal matters.

Office of Farm Management, W. J. SPILLMAN, *Chief*.
Studies the details of farm practice from a business standpoint, with a view to determining the most efficient methods of operation.

Weather Bureau, CHAS. F. MARVIN, *Chief*.
Conducts meteorological investigations; issues weather maps; handles all work relating to climate, storm warnings, frost warnings, etc.

Forest Service, HENRY S. GRAVES, *Forester*.
Administers the national forests and develops use of their resources; directs all research work relating to forestry and forest utilization.

Bureau of Animal Industry, A. D. MELVIN, *Chief*.
Studies and gives information regarding live stock; conducts the meat-inspection and quarantine work.

Bureau of Plant Industry, WM. A. TAYLOR, *Chief*.
Investigates problems relating to plants and plant industries.

Bureau of Chemistry, CARL L. ALSBERG, *Chief*.
Enforces the Food and Drugs Act; investigates questions of agricultural chemistry.

Bureau of Soils, MILTON WHITNEY, *Chief*.
Surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Entomology, L. O. HOWARD, *Chief*.
Studies insects in their relation to agriculture.

Bureau of Biological Survey, HENRY W. HENSHAW, *Chief*.
Studies wild birds and animals, their distribution, habits, and relations to agriculture; administers the Federal bird and game reservations and the Federal laws protecting game and regulating the importation of birds and animals. Controls noxious mammals and experiments in fur farming.

Bureau of Crop Estimates, LEON M. ESTABROOK, *Chief*.
Collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Office of Public Roads and Rural Engineering, LOGAN WALLER PAGE, *Director*.
Studies and supplies information regarding road making, road management, road maintenance, farm irrigation, farm drainage, and rural engineering and architecture.

States Relations Service, A. C. TRUE, *Director*.
Supervises the use of Federal funds for agricultural experiment stations and agricultural extension work; investigates agricultural education, and food, dietetics, clothing, and household equipment and management.

Office of Markets and Rural Organization, CHARLES J. BRAND, *Chief*.
Investigates problems pertaining to marketing and distribution of farm products and organizing rural communities for marketing, rural credit, and other purposes. Enforces Cotton-Futures Act.

Federal Horticultural Board, C. L. MARLATT, *Chairman*.
Assists in the enforcement of the Plant Quarantine Act of August 20, 1912.

Insecticide and Fungicide Board, J. K. HAYWOOD, *Chairman*.
Assists in the enforcement of the Insecticide Act of 1910.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., AUGUST 16, 1916. No. 2

ALFALFA WEEVIL.

Gradually Spreading in Northwestern States—Description of Insect and Control Measures.

The alfalfa weevil is spreading in a way which makes it possible that sooner or later every section of the country will have to consider the problem of guarding against this pest. During the 12 years since the weevil was introduced into America it has been confined to the limits of the Great Basin of the West, but it has been found this year by the Bureau of Entomology at Malta, McCammon, Pocatello, and Blackfoot, Idaho, all well within the Snake River drainage system, and at Duchesne, Utah, in the Colorado River system, which, like that of the Snake, slopes to the Pacific. Within the Great Basin the weevil has spread as far south as Richfield, into the alfalfa fields of central Utah. The insect in spreading across the continental divide, department entomologists say, is to be regarded merely as passing a convenient landmark rather than as surmounting a barrier, for experience has not shown that it spreads faster along rivers than across mountain ranges. Nevertheless, it is now many miles nearer to important alfalfa-growing districts which have hitherto felt safe from its attack.

Description of Weevil.

A description of the alfalfa weevil and methods of combating its ravages are contained in a new publication of the department, Farmers' Bulletin 741. The spread of the pest has, as a matter of fact, been slower than was at one time feared, but its progress has been steady. In Utah and in small portions of Idaho and Wyoming, where it now exists, it has caused at times a loss of 50 per cent of the first cutting of alfalfa and a total loss of the second cutting.

In order that farmers in those sections in which the weevil has not yet appeared may be able to recognize the pest and to protect their crops from it, the bulletin contains details of its habits and of its appearance in the various life stages. The weevil is most easily discovered in the form of the full-grown larva. It is then a green worm-like creature one-fourth of an inch long, with a black head and a faint white stripe down the middle of the back. It feeds upon the leaves of alfalfa mainly during late May, June, and early July and may be found by sweeping the tops of the plants with an insect net or by looking for the notches in the leaves where it has fed. When the larvæ are numerous they destroy most of the tender growth and cause the tops to appear white, making the field look as if frostbitten when viewed from a distance.

The adult insect is an oval, brown beetle three-sixteenths of an inch long, with a prominent snout. Its color frequently is nearly black. This beetle is harder to discover than the larva, but, on the other hand, it is present in the field the whole year around. In winter it can be found by digging about the crowns and roots of alfalfa plants.

Control Measures.

The alfalfa weevil does not hibernate definitely. When the weather is cool the adults are quiet, but with warmer temperatures they quickly resume their activities. Egg laying begins in early spring and is usually ended by June 10. One efficacious method of controlling the pest therefore is to destroy the eggs by pasturing the first crop up to that time. A similar result may be obtained by cutting the alfalfa green and feeding it as a soiling crop.

If this is not done, the larvæ hatch in large numbers about the last week of May, or earlier, and eat the alfalfa leaves so rapidly that the plant is unable to outgrow the injury. After the field is cut the larvæ which have been feeding upon the first crop gather upon the buds of the stubble and frequently consume all of the second crop. By that time most of the insects have completed their growing period and have gone into the pupal or resting stage. The later growth of the crop therefore does not suffer from them.

To protect the crop, pasturing, as has been said, is effective in the early part of the season. The field should be divided into two or three lots, and each lot should be pastured alternately, the animals being left in it until the alfalfa has been eaten down close to the ground. The number and size of the lots should be proportioned to the producing power of the field and the number of animals to be pastured, so that each lot may be grazed about once in two weeks. Pasturing should be continued until most of the weevil eggs have been laid, which in practice means a little later than the usual cutting time for the first crop. This method has the additional advantage

(*Continued on page 2.*)

55112°—16

FEEDING DAIRY COWS.

Many Factors to Be Considered in Economical Milk Production—Pasturing Not Always Profitable.

One of the most common mistakes in the feeding of dairy cows on the farm is that the good cows are not given a sufficient quantity of feed above that required for their physical maintenance to obtain the maximum quantity of milk they are capable of producing. Successful feeding of dairy cows involves the providing of an abundant supply of palatable, nutritious feed at a minimum cost and feeding in such a way as to receive the largest milk production from the feed consumed. Feeding for profit is defined as liberal feeding, or feeding to the full capacity of the cow, in a new Farmers' Bulletin of the department, No. 743, The Feeding of Dairy Cows, which discusses many of the factors involved in economical feeding.

From the standpoint of economical milk production, a dairy cow generally should not be fed more than she will consume without gaining in weight. There are times, however, according to the bulletin, when it is desirable to make exceptions to this rule. Practically all heavy milk producers lose weight in the early part of their lactation period; that is, they produce milk at the expense of their body flesh. When such cows approach the end of their milking period they normally regain the flesh they have lost, and the farmer can well afford to feed them liberally, with the assurance that he will be repaid in the form of milk when the cows again freshen.

Pasture is the natural feed for cows, and for average conditions, with ample pasture of good grasses or legumes in good, succulent condition, good production can be secured.

The cost of land is a factor in the economy of using pasture, however. If pastures are depended upon entirely for from four to six months of the year, and production is kept up to a profitable standard, anywhere from 1 to 4 acres or more must be provided for each cow, says the bulletin. This is assuming that a permanent pasture is of good, clean turf, with few or no waste places, or that a temporary pasture has a good stand of grass or legumes throughout. Land that will provide such pastures frequently is high priced. The following tables show the cost of pasturing a cow on land ranging from $25 to $200 an acre:

Interest on cost of pasture per cow for the season; interest at 6 per cent on the value of the land, allowing from 1 to 4 acres per cow.

Acres per cow.	Value of land per acre.				
	$25	$50	$100	$150	$200
1	$1.50	$3.00	$6.00	$9.00	$12.00
1½	2.25	4.50	9.00	13.50	18.00
2	3.00	6.00	12.00	18.00	24.00
2½	3.75	7.50	15.00	22.50	30.00
3	4.50	9.00	18.00	27.00	36.00
3½	5.25	10.50	21.00	31.50	42.00
4	6.00	12.00	24.00	36.00	48.00

Cost of pasture per cow per day on basis of preceding table with a pasture season of 150 days.

Acres per cow.	Value of land per acre.				
	$25	$50	$100	$150	$200
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1	1	2	4	6	8
1½	1½	3	6	9	12
2	2	4	8	12	16
2½	2½	5	10	15	20
3	3	6	12	18	24
3½	3½	7	14	21	28
4	4	8	16	24	32

Where the value of land is so high that the cost of pasturing is excessive, or where the land may be more profitably used for growing crops, other methods of summer feeding are more profitable. It is stated that in some sections for average production a cow can be fed on dry feed for 20 cents a day, and when the cost of pasturing exceeds that amount some other method of feeding should be considered.

Grain should be fed to heavy-producing cows under all pasture conditions, says the bulletin. The following table is furnished as a guide to feeding grain with an abundant pasture. Variations should be made to suit different conditions and individual cows.

Jersey cow.		Holstein-Friesian or Ayrshire cow.	
Daily milk production (pounds).	Pounds of grain.	Daily milk production (pounds).	Pounds of grain.
20	3	25	3
25	4	30	5
30	6	35	7
35	8	40	9
40	10	50	10

Grain fed to cows on pasture need not contain the same percentage of protein as for winter feeding. Pasture being an approximately balanced ration, the grain ration should have about the same proportion of protein to other nutrients. The following mixtures are suggested for supplementing pasture without other roughage:

	Pounds.
Mixture No. 1 (per cent digestible protein, 10.3):	
Ground oats	100
Wheat bran	100
Corn meal	50
Mixture No. 2 (per cent digestible protein, 12.7):	
Wheat bran	100
Corn meal	100
Cottonseed meal	25
Mixture No. 3 (per cent digestible protein, 15.5):	
Corn-and-cob meal	250
Cottonseed meal	100
Mixture No. 4 (per cent digestible protein, 13.6):	
Wheat bran	100
Gluten feed	50
Corn meal	50

To carry cows over a period of short pasture without a falling off in milk, soiling crops are growing in favor. For this purpose second-growth red clover, alfalfa, oats, or peas are excellent. Corn is also available in August and September. What may be a disadvantage in the use of soiling crops is the extra labor required to cut and haul these crops from day to day, especially if field work is pressing.

On high-priced land, where the problem is to produce a sufficient quantity of roughage, or if the cost of pasturing is excessive, the summer silo may be used to advantage. An acre of corn in the form of silage will provide succulent roughage for several cows for a season. During periods of drought, when both pastures and soiling crops fail, a silo filled with well-matured silage grown the previous year is most valuable.

In planning a summer silo it should be kept in mind that its diameter should be in relation to the number of cows fed daily. As a general rule, under summer conditions a cow will consume about 20 pounds of silage. Silage enough must be removed daily to prevent excessive surface fermentation. On this basis a summer silo for 20 cows should be 8 feet in diameter; for 30 cows, 10 feet; and for 40 cows, 12 feet. As 8 feet is about the minimum diameter of a silo for best results, a summer silo is most applicable in herds of 20 or more cows.

ALFALFA WEEVIL.

(*Continued from page 1.*)

of providing an economical method of fattening live stock. Combined with the proper feed of grain, alfalfa pasture is excellent for putting on weight, and it is said that many farms would probably be more profitable if their management centered about the pasturing of stock on alfalfa, with the growing of enough other crops to provide grain and forage throughout the year.

If the weevils are not killed early in the year, they may be destroyed after the first crop has been removed by getting rid of all the vegetation in the field, crushing the clods, and filling the cracks so as to expose the entire surface to the sun. This is best done by covering the field with a dust mulch, the dust being an additional means of killing weevils. Success obviously depends upon doing the work when the ground is dry and the weather warm and bright.

The second crop may also be protected by spraying the stubble. Spraying may also be resorted to in the spring. From 50 to 100 gallons per acre of a mixture of arsenite of zinc and water, in the proportion of 4 pounds of powder in 100 gallons, are used for this purpose. The apparatus best suited for alfalfa spraying is described in detail in the bulletin. Still another recommendation made in this bulletin is the stimulation of the growth of the alfalfa by cultivating the field in the spring. This does not destroy the weevils, but it serves to produce a larger and earlier yield when their attacks make early cutting necessary.

Up to the present, however, more farmers are concerned with preventing the alfalfa weevil reaching their fields than they are with controlling it in them. No one knows exactly how the weevils spread, but certain facts in regard to this matter have been ascertained. It is known, for example, that the insects are often found in green alfalfa fresh from the field and in second-crop hay and among potatoes which have been in contact with it. They are found also in cured alfalfa hay, especially that of the second cutting. Potatoes often are hauled in cars upon a bedding of green alfalfa hay, and there is danger that the weevil may be transported in this way. On the other hand, however, there is no evidence to show that the weevil spreads more rapidly along railroads than elsewhere.

UNLABELED CANNED GOODS.

The department has been requested to define its position with respect to the application of the Net Weight Amendment to the Federal Food and Drugs Act to the transportation in interstate commerce of unlabeled canned goods. A modification of a former opinion, issued May 12, 1916, has been asked for and, upon reconsideration, the department has issued the following announcement:

"Until further notice, the department will not recommend proceedings under the Food and Drugs Act on account of the shipment in interstate commerce, or the sale in the District of Columbia or the Territories, of unlabeled canned foods solely upon the ground that the same do not bear a statement of the quantity of the contents, if such shipment or sale be other than to a retail dealer or to a consumer and the cans bear a correct statement of the quantity of the contents when sold or delivered to retail dealers and consumers. If investigation discloses that failure to mark the quantity of the contents on unlabeled cans affords means to defraud or to defeat the purposes of the act, it will be the duty of the department to recommend proceedings, and reasonable notice to that effect will be given."

SELF-FEEDER FOR PIGS.

Experiment Shows That for Fattening It Compares Favorably with Ordinary Hand Feeding.

The value of the self-feeder method of fattening pigs was demonstrated in an experiment recently carried out at the experimental farm of the Bureau of Animal Industry at Beltsville, Md. The object was to determine the value of this system as compared with the ordinary method of hand feeding.

The pigs used in the experiment were grade Berkshires farrowed in the fall of 1915. They averaged 93 pounds per head when the experiment started. They were fairly uniform in size and age, but were not the best pigs in the fall farrow.

The hand-fed lot were fed three times daily, the amount being governed by the appetites. The ration given the hand-fed hogs was composed of 5 parts corn meal, 4 parts middlings, and 1 part tankage. The corn meal and supplements were mixed dry. Just before feeding, the amount to be fed was weighed and then mixed into a thick slop, enough water being used to make the slop pour out of the bucket without sticking. The feeding was done at 7 and 11.30 o'clock in the forenoon and 4.30 o'clock in the afternoon.

The self-fed lot had free access at all times to corn meal, middlings, and tankage in separate compartments of a self-feeder. Close watch was kept on the feeder, and a supply of each feed maintained.

Both lots of pigs were kept in dry lots a quarter of an acre in size. The pigs were given ample room for exercise and sufficient shelter. The pigs in both lots had access to a mineral mixture composed of—

Charcoal	bushel	1
Hardwood ashes	do	1
Salt	pounds	8
Air-slaked lime	do	8
Sulphur	do	4
Pulverized copperas	do	2

Summary of results.

Feeding period, Feb. 22 to May 2, 1916—70 days.

	Hand-fed lot.[1]	Self-feeder lot.[2]
Number of pigs	9	9
Average initial weight, pounds	94.00	92.00
Average final weight, pounds	167.50	205.00
Average gain per pig...do	73.50	113.00
Average daily gain....do	1.04	1.61
Feed eaten daily per pig:		
Corn meal.....pounds	2.13	5.46
Middlings.....do	1.70	.81
Tankage.....do	.42	.28
Average daily ration, pounds	4.25	6.55
Pounds of feed per 100 pounds gain	410.00	405.00
Cost of 100 pounds gain	$6.24	$5.67

[1] Ration: 5 parts corn meal, 4 parts middlings, 1 part tankage.
[2] Ration: Corn meal, middlings, tankage.

The cost per ton of feed used in the experiments was as follows: Corn meal, $27; middlings, $30; tankage, $50.

All the pigs in the self-feeder lot maintained keen appetites during the 70 days of feeding. The hand-fed pigs averaged 94 pounds per head and the self-fed pigs 92 pounds per head at the beginning of the test. At the end of 70 days the hand-fed pigs averaged 167.5 pounds and the self-fed pigs 205 pounds, 37.5 pounds more than the hand-fed pigs. The self-fed pigs consumed a greater quantity of feed per head during the test than the hand-fed pigs, but it took only 405 pounds of feed to produce 100 pounds of gain in the case of the self-fed pigs at a cost of $5.67, while the hand-fed pigs produced 100 pounds of gain at a cost of $6.24.

The self-fed pigs made a better showing, surpassing the hand-fed lot in both rate and economy of gains. The results of the experiment clearly show that for quick fattening the self-feeder is very practicable.

"VINEGAR BEES."

Housewives Warned Against Substance Alleged to Make Vinegar, Beer, Wine, and a Kidney Cure.

The department is receiving many inquiries regarding a substance offered for sale for making vinegar or alcoholic beverages under the names "Vinegar Bees," "Beer Bees," "Australian Bees," "California Bees," "African Bees," and various other designations. These names are being applied, apparently, to a kind of wild yeast or ferment which, as far as can be learned, was originated by the mountaineers of Tennessee and Kentucky.

The primitive process for making "bees" was to expose to the air a mixture of corn meal and molasses until it became impregnated with wild yeast and other bacteria. The ferment so produced was employed locally in making a sort of vinegar or certain alcoholic solutions, by adding it to a mixture of water and either brown sugar or molasses, which then was allowed to work or ferment.

The recent inquiries seem to have been stimulated by enterprising individuals and firms for advertising vinegar "bees" under one or more of the names mentioned. Many of these advertisers make extravagant claims for the product and ask a fancy price for it which, the yeast specialists of the department say, is out of all proportion to its original cost or to its actual worth. In some of the advertisements which have reached the department the sellers assert that the substance when mixed with water and molasses or sugar will produce beer or wine. Other promoters go so far as to say that the fermented mixture is beneficial in the treatment of rheumatism and kidney trouble, claims which have no foundation in fact.

In the opinion of the department's specialists, a product made by catching yeast and bacteria indiscriminately from the air may very well contain harmful as well as desirable organisms, and the specialists state that great care should be exercised in both the preparation and the use of such a product. In their judgment, "bees" is not as well suited for producing alcoholic fermentation as is the ordinary yeast cake, and they can not recommend it at all for making vinegar.

LOUISIANA TO FIGHT TICK.

New Law Places Work Under State Board—Reinfestation of Clean Areas Prevented.

The permanent eradication of the cattle tick in Louisiana now seems assured as a result of the passage by the State legislature of the State-wide tick-eradication law. After April 1, 1918, tick eradication will be under the direction of the State Live Stock Sanitary Board, and the law provides that such parishes as may be designated by that board will be required to make adequate provision for the construction of dipping vats and the dipping of cattle for ticks, and to continue such dipping until the ticks are entirely eliminated.

While the law will not be enforced until April 1, 1918, the Federal authorities urge the wisdom of making provision now in the different parishes for the construction of vats and for the necessary chemicals for the baths.

As an indication that the people of Louisiana are not inclined to wait until 1918 before taking up tick eradication, Federal agents state that active work is now being conducted in nine parishes, with the result that during the month of June parish, State, and Federal employees supervised 243,908 dippings of cattle to rid them of ticks. The Federal authorities believe that a large number of square miles will be added to the tick-free area in Louisiana by the end of this year.

As an additional safeguard against the spread of the tick, the State legislature has also passed a law prohibiting the movement of cattle from any quarantined area into the tick-free section of Louisiana or into any part of the State where systematic tick-eradication work is being conducted, unless the animals have been dipped twice in the standard solution, from 5 to 12 days apart. This dipping must be done under the supervision of a Federal or State inspector, who will furnish a certificate of dipping. The cattle must not be exposed to tick infestation after the second dipping. Where cattle are intended for immediate slaughter these restrictions do not apply, but the slaughtering centers must be provided with facilities for handling cattle satisfactory to the State Live Stock Sanitary Board.

MUSCADINE GRAPES.

Possibilities of Profit on Vineyards Which Can Be Established Over Wide Area in Southeast.

Muscadine grapes can be grown successfully over a very large area in the southern and southeastern portion of the United States, according to specialists of the department.

In Farmers' Bulletin No. 709, a new publication dealing with this subject, it is stated that there are at least 250,000,000 acres of land along the southeastern Atlantic coast and the Gulf coast which are well adapted to the culture of these grapes and a large percentage of which is at present untilled. It is, in fact, only during the last 10 years that the production of Muscadine grapes, which are especially suited to this territory, has assumed commercial importance.

Muscadine grapes are used chiefly for wine making, but when carefully picked and handled there is a considerable demand for them as table grapes. They also make excellent jellies, preserves, catsups, etc. The Scuppernong, a light-colored variety, and the Eden, Flowers, James, Memory, and Thomas, dark-colored varieties, are the only varieties listed in catalogues and grown in a commercial way. Of these, the Scuppernong is much preferred for wine purposes.

Muscadine grapes can be successfully grown wherever cotton thrives, and can be grown on almost any of the tillable soils along the Atlantic coast from the James River to Florida and from Florida along the Gulf coast to Texas, their natural habitat extending along the sea well into the mountains. They also succeed along the Mississippi River as far north as southeastern Missouri and the Tennessee River.

The best results are obtained on sandy loam soils that are well drained and contain a fair amount of fertility and organic matter.

It is important that the subsoil be well drained. If Muscadines are to be planted on new land the land should be well prepared and some annual crop requiring cultivation be grown on it at least one season.

The first two seasons after planting, hoed crops, such as melons, peanuts, cotton, or tobacco may be grown between the vines. After this a leguminous crop, such as cowpeas and soy beans in the summer, and vetch, bur clover, or crimson clover in the winter, may be grown to regulate the soil-moisture supply and fertility.

If the vines are properly supported it will do no harm to graze cows, sheep, or hogs on the winter cover crop in the vineyard in early spring before the vine growth starts. After the second season the winter cover crops should be plowed under in the spring as soon as possible after grazing, cutting for hay, or harvesting for seed, followed with cultivation through the early part of the summer.

In addition to good cultivation and intercropping, commercial fertilizers should be used to give best results with Muscadine grapes. It is also considered good practice to mulch young vines with stable manure. Nitrogenous fertilizers applied to young vines induce them to make a robust growth and to bear a profitable crop the third year, results which under ordinary conditions would not have been attained before the fourth year. After the vines have reached bearing age, with proper culture and intercropping they will need but little nitrogen to keep them thrifty, but will require more phosphoric acid and potash.

All the leading fruiting varieties of Muscadine grapes have been proven to be self-sterile and set no fruit unless their blossoms are pollinated with the fertile pollen of male vines. This cross-pollination is brought about by insects. Therefore, it is necessary to plant male vines here and there in the vineyard, one such vine to every eight or ten fruiting vines being recommended. Investigations have shown that under ordinary circumstances only 7 to 10 per cent of the Muscadine buds normally produce ripe berries, while with perfect pollination 20 to 30 per cent will bear fruit. This is equivalent to an increased yield of approximately 200 to 300 per cent.

Until recently it was a common belief that Muscadine vines could not be pruned without killing them. This has been shown to be a mistake, but there are still persons who advocate the growing of vines without pruning. The safest plan, according to knowledge now available, is to follow moderate pruning.

In training the vines, two systems are employed, (1) the horizontal, or overhead, system, by which the growth is spread on an overhead canopy about 7 feet above the ground and supported by posts, and (2) the upright, or vertical, system, in which the growth is spread over a vertical trellis. Both have their advantages.

Muscadine grapes shatter readily from the stem. When the fruit is intended for wineries it is harvested by jarring the berries from the vines onto large canvas sheets. Fruit for table use should be hand picked. By careful hand picking, the fruit of some varieties can be secured in clusters and it sells for a higher price upon the market.

One of the purposes of the investigations now carried on by the department is to develop, through breeding work, varieties in which the berries will adhere better to the cluster. Some other aims of the breeding investigations are (1) to originate perfect-flowered, self-fertile varieties, to eliminate the necessity of interplanting with male vines, and (2) to originate varieties having larger clusters and fruit of better quality.

The Muscadine grapes are very productive, and up to the present time remunerative prices have been secured for the fruit.

SPECIAL WEATHER SERVICE.

Weather Bureau Aids Sheepmen in Protecting Flocks from Storms.

In order to enable the owners of some 2,000,000 sheep and their lambs in the Northwest to protect the lambs and sheared sheep from the effects of disastrous storms, the Weather Bureau, during the spring of 1916, installed a special storm-warning service for Oregon, Washington, and Idaho sheep ranges. This service proved to be of such value to sheepmen during the recent lambing and shearing season that it will be continued and possibly somewhat extended.

Storms, especially those accompanied by snow and cold rains, kill large numbers of lambs and recently sheared sheep unless they can be protected in time. This is especially true, because early lambing to meet high market prices is extensively practiced in this section and because winter feeding is expensive, and sheep are usually shorn and put on the ranges as early as possible. Even before shearing, under especially stormy, snowy, and muddy conditions, a ewe will readily succumb to fatigue and starvation, and her lamb may perish with her.

There have been instances where the losses reached as much as 50 per cent of flocks, in which the animals were valued at about $6 each. As a result of these losses the owners make a practice where possible of sheltering their shorn sheep in canyons and keeping them near shelters during unsettled weather in early spring. Later the sheep are allowed to graze more widely, and the herders must have warning of storms sufficiently in advance to enable them to drive the shee to the nearest shelter. During the springs of 1914 and 1915 thousands of sheep beyond the reach of shelter perished in severe storms that swept over these States.

The service during the spring was operated through 25 distributing centers through which weather reports and special warnings covering temperature, rain, snow, winds, clouds, and clear sky, all of which have a bearing on the safety of sheep, were distributed to nearly 100 other communities. The word was passed along by telephone to several hundred additional stockmen. In this way the warnings reached the owners of most of the sheep in these States by noon, or earlier, of the day of issue. In sections in or around the national forests the forest supervisors cooperated with the Weather Bureau in distributing these forecasts and warnings.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1918

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., AUGUST 23, 1916. No. 3

GRAIN STANDARDS ACT.

Provides for Establishment of Official Standards and Licensing of Grain Inspectors.

The United States grain standards act, which gives the Secretary of Agriculture authority to establish, as soon as may be, official grain standards applicable to grain shipped in interstate or foreign commerce, became a law on August 11, 1916.

The act authorizes the Secretary of Agriculture to investigate the handling and grading of grain and to establish, as soon as may be, standards for corn, wheat, rye, oats, barley, flaxseed, and other grains. Not less than 90 days' public notice must be given in advance of the date on which any such standard becomes effective.

Whenever such standards are established for any grain, the act forbids the shipment or delivery for shipment, in interstate or foreign commerce originating in the United States, of any such grain which is sold, offered for sale, or consigned for sale by grade, unless it is inspected and graded by a licensed inspector, either at the place of shipment, at a point in transit, or at the destination. In case no licensed inspector is located either at the point of shipment or at the point of destination, the grain may be shipped without inspection, in which event either party to the transaction may refer any dispute as to the grade to the Secretary of Agriculture.

When grain shipped or delivered for shipment in interstate or foreign commerce is required to be inspected and graded by a licensed inspector, it is made unlawful for any person to represent that it is of a grade other than that stated in a certificate issued in compliance with the act.

Shipment by Sample Permitted.

The act permits the shipment in interstate or foreign commerce of grain sold by sample or by type, or under any description which is not false and misleading and does not include any of the terms of the official grain standards.

The Secretary of Agriculture is authorized to examine grain that has been certified to conform to any grade of the official grain standards, or that has been shipped in interstate or foreign commerce. If, after an opportunity for hearing has been given to the interested parties, it is determined that any such grain has been incorrectly certified or has been sold under a name, description, or designation which is false or misleading, he may publish his findings.

Right of Appeal.

When grain shipped in interstate or foreign commerce has been inspected as required by the act, any interested party may, either with or without reinspection, appeal the question of its grade to the Secretary of Agriculture. The Secretary of Agriculture is authorized to determine the true grade of the grain, and his findings are made prima facie evidence of that fact in suits between the parties in Federal courts. Reasonable fees may be charged for hearing disputes and appeals. When appeals are sustained, such fees are to be refunded. Every person employed to inspect and grade grain for shipment in interstate or foreign commerce is prohibited from certifying the grain according to the official grain standards, unless he holds an unsuspended and unrevoked license issued by the Secretary of Agriculture.

Licensing Inspectors.

Any person who presents satisfactory evidence of competency may be licensed as an inspector under the act. In States which have, or may hereafter, have State grain inspection departments, the Secretary of Agriculture is required to issue licenses to persons authorized and employed to inspect and grade grain under the laws of such States. Licensed inspectors and persons employed by the Secretary of Agriculture for carrying out the provisions of the act are prohibited from having any interest in any grain elevator or warehouse, or in the merchandising of grain, or from being employed by any person owning or operating any grain elevator or warehouse. Licensed inspectors are required to keep records of all grain inspected by them and to make detailed reports to the Secretary of Agriculture. The license of any inspector found to be incompetent, or to have issued any false certificate of grade, or otherwise to have violated any provision of the act, may be suspended or revoked by the Secretary of Agriculture.

Penalties.

Any licensed inspector who knowingly inspects or grades improperly grain shipped in interstate or foreign commerce, or know-

(*Continued on page 3.*)

56479°—16

U. S. WAREHOUSE ACT.

Provides for Licensed and Bonded Warehouses and Issuance of Standardized Storage Receipts.

The central purpose of the United States warehouse act, which became a law on August 11, 1916, is to establish a form of warehouse receipt for cotton, grain, wool, tobacco, and flaxseed which will make these receipts easily and widely negotiable as delivery orders or as collateral for loans and, therefore, of definite assistance in financing crops. This purpose the act aims to attain by licensing and bonding warehouses under conditions which will insure the integrity of their receipts and make these receipts reliable evidence of the condition, quality, quantity, and ownership of the products named which may be stored with them.

The Secretary of Agriculture is given general authority to investigate the storage, warehousing, classification, weighing, and certifying of cotton, wool, grains, tobacco, and flaxseed, and to classify warehouses for which licenses are applied for or issued.

A Permissive Statute.

He may issue to warehousemen licenses for the conduct of warehouses in which such products may be stored for interstate or foreign commerce, and also of warehouses located in places under the exclusive jurisdiction of the United States in which such products may be stored. Persons who are not warehousemen may also be licensed, subject to the same requirements as licensed warehousemen, to accept such products for storage in warehouses owned, operated, or leased by any State. Licenses may be issued for periods not exceeding one year, and are renewable upon showing satisfactory to the Secretary of Agriculture. A fee not exceeding $2 may be charged for each license or renewal and, in addition, a reasonable fee for each examination or inspection of a warehouse made upon application of the warehouseman. It is not, however, compulsory that any warehouseman be licensed by the Secretary of Agriculture. The system is wholly permissive.

Every applicant for a license as a warehouseman must agree to comply with the act and the rules and regulations prescribed under it. He must give a bond, with other than personal surety, to secure the per-

formance of his obligations as a warehouseman under the laws of the place in which the warehouse is conducted, under his contracts with his depositors, and under the United States warehouse act. The right is given to any person injured through its breach to sue in his own name on the bond for any damages sustained by him. When such bond has been given, the warehouse may be designated as bonded under the United States warehouse act.

Inspection of Licensed Warehouses.

The Secretary of Agriculture is authorized to inspect warehouses licensed, or for which licenses are applied for; to determine whether they are suitable for the proper storage of agricultural products; to prescribe the duties of licensed warehousemen with respect to their care of, and responsibility for, agricultural products; and to examine agricultural products stored in licensed warehouses. Deposits of agricultural products in such warehouses are made subject to the act and the rules and regulations under it.

Duties of Warehousemen.

Licensed warehousemen are not permitted to discriminate between persons desiring to store agricultural products in their warehouses. All agricultural products, except fungible products (such as grain and the like), of the same kind and grade, for which separate receipts are issued, must be so kept that they may be separately identified and redelivered to the depositor. Warehousemen may mix grain and other fungible products, ordinarily mixed in storage, when they are of the same kind and grade and are delivered from the same mass, but may not mix such products when they are of different grades.

Warehouse Receipts.

Original receipts must be issued for all agricultural products stored in licensed warehouses, but only when such products are actually stored at the time of the issuance of the receipts. Additional or further receipts for the same products may only be issued in place of lost or destroyed receipts, and then only under specified conditions.

The act enumerates certain facts which must be stated in all receipts issued by licensed warehousemen. They must show (*a*) the location of the warehouse; (*b*) the date of issuance; (*c*) the consecutive number; (*d*) whether the products will be delivered to the bearer, to a specified person, or to a specified person or his order; (*e*) the rate of storage charges; (*f*) a description of the product stored, including the quantity or weight; (*g*) the grade or other class, according to the official standards of the United States for such products, unless there be no such standard, in which event it must be stated according to some recognized standard or according to rules and regulations prescribed by the Secretary of Agriculture; (*h*) that they are issued subject to the United States warehouse act and the rules and regulations under it; (*i*) ownership, if any, of the products by the warehouseman; (*j*) any lien claimed by the warehouseman for advance made or liabilities incurred; (*k*) any other facts required by the Secretary of Agriculture; (*l*) the signature of the warehouseman, which may be made by his authorized agent. Unless otherwise required by the law of the State in which the warehouse is located, the grade may be omitted at the request of depositors, except in case of fungible agricultural products, if the receipts clearly show that they are not negotiable.

Licensed Classifiers and Weighers.

The Secretary of Agriculture may license competent persons to classify and weigh agricultural products stored in licensed warehouses, and to certify the classification or weight of the products. Such licenses may be suspended or revoked at any time if the licensee fails to perform his duties properly. All grain, flaxseed, and other fungible products stored for interstate or foreign commerce in licensed warehouses must be inspected and graded by persons licensed for the purpose. Authority is given to establish official standards for the agricultural products named in the act, and standards established under any other act of Congress are adopted for the purpose of the warehouse act.

Delivery of Products.

Upon demand of depositors or holders of receipts, licensed warehousemen, in the absence of some lawful excuse, must deliver products stored without unnecessary delay. The demand for delivery must be accompanied with an offer to satisfy the warehouseman's lien, to surrender the receipt, if negotiable, properly indorsed, and, when requested by the warehouseman, to sign an acknowledgment of the receipt of the products redelivered. Upon the redelivery of the products for which given, all receipts returned must be canceled.

Records and Reports.

Licensed warehousemen are required to keep in safe places complete and correct records of all agricultural products stored and withdrawn, and of receipts issued, returned, and canceled. They must also make detailed reports to the Secretary of Agriculture as often as required. Their books, records, papers, and accounts are subject to examination by the Department of Agriculture.

Revocation of Licenses.

The Secretary of Agriculture is required to publish the names, locations, and addresses of all warehouses and persons licensed under the act, with lists of all licenses revoked and the causes of termination. He may publish his findings whenever he determines that a licensed warehouseman is not performing fully his duties under the act. He may suspend or revoke any license if the licensee fails to comply with the act or the rules and regulations. He may also suspend or revoke any license issued to a warehouseman if unreasonable and exorbitant charges have been made for services rendered.

The act expressly provides that nothing contained in it shall be construed to interfere with State laws relating to warehouses, warehousemen, weighers, graders, and classifiers, or with similar Federal laws. On the contrary, the Secretary of Agriculture is authorized to cooperate with officials charged with the enforcement of such State laws in order to carry out the provisions of the United States warehouse act.

Penalties.

Punishment by fine or imprisonment, or both, may be imposed on any person who counterfeits, forges, or uses without proper authority any license issued under the act, or who issues or utters a false or fraudulent receipt or certificate, or who uses a name or description conveying the impression that a warehouse is designated as bonded under the act unless the bond has actually been filed and approved or the license issued remains unsuspended and unrevoked.

An appropriation of $50,000 is made for carrying out the provisions of the act. The necessary rules and regulations are now in course of preparation, and will be published and widely distributed at the earliest practicable date.

Objects of the Act.

Warehouse legislation, in its bearing upon the marketing and distribution of farm products, was discussed by the Secretary of Agriculture in his annual report for 1915, in which he said:

"Investigations conducted by the Office of Markets and Rural Organization indicate that there is serious need of warehouse legislation. It would seem that the most desirable action on the part of the States would be the passage of laws which would guarantee the integrity of warehouse receipts. These laws should be uniform, so that the conditions governing such receipts may be the same throughout the country, thereby greatly increasing their availability as collateral for loans at distant banking centers. The uniform warehouse receipts act is now in force in 31 States.

"In addition to the legislation that has been or may be enacted by the States, it is believed that the enactment of a Federal warehouse law would be of great benefit. The general interest in the subject is well shown

by the inquiries the department constantly is receiving. In fact, many warehousemen, under the misapprehension that a bill on the subject considered by the last Congress actually had been passed, have asked the department to give them information as to how to comply with it. The proposed measure, which is permissive in character, would enable the Department of Agriculture to license bonded warehouses in the various States. It would promote the better storing of farm products, increase the desirability of receipts as collaterals for loans, and therefore would be of definite assistance in financing crops. A Federal statute on the subject also would promote the standardizing of storages, of warehouse receipts, and of marketing processes."

GRAIN STANDARDS ACT.

(*Continued from page 1.*)

ingly gives any false certificate of grade, or accepts a bribe for neglect or improper performance of duty, may also be punished by fine or imprisonment or both.

Similar punishment may be imposed upon other persons who violate certain portions of the act, particularly those with reference to the inspection by licensed inspectors of grain shipped in interstate or foreign commerce.

An appropriation of $250,000 is made for the enforcement of the act.

The necessary rules and regulations will be prepared and published at the earliest possible date, in order that persons interested may have an opportunity to become familiar with them before any of the standards become effective.

Objects Sought in the Act.

The benefits which the act seeks to confer are described in the language used in the annual report of 1914 of the Secretary of Agriculture with particular reference to the establishment of standards for corn:

" * * * Grades for that grain * * *, if generally adopted and uniformly applied throughout the country, will simplify the relations between producers, dealers, and consumers. Under these grades, fairly used, the grower or shipper of a superior quality of grain will be in a position to demand from the buyer the fair value to which the quality of his product entitles him. On the other hand, the producer of a product of inferior quality will receive a lower return.

"The beneficial influences upon agriculture of a uniform system of grading staple crop products will be very great through the financial incentive afforded the farmer to improve the quality of his product by the careful selection of varieties, skillful culture, and adequate and effective methods of harvesting, handling, and protecting it while in his hands."

GROWING TIMOTHY.

Usually Grown in Rotations with Other Crops—Seeding and Management of Meadows.

Timothy ordinarily is grown in mixtures, usually with red clover or with red and alsike clovers. In the New England States and parts of New York redtop commonly is added to the mixture. Alsike clover is especially to be recommended on poorly drained soils that have a tendency to heave, as under such conditions it generally will come through the winter better than red clover. On such soils redtop can be added to good advantage. The first crop of hay is composed chiefly of clover. After the first year most of the clover disappears and the following hay crops are made up almost entirely of timothy or of timothy and redtop. In some of the irrigated valleys of the Northwest alfalfa is substituted for clover in mixture with timothy.

Seeding.

Timothy generally is sown with wheat, rye, oats, or barley, which commonly are referred to as nurse crops. The first hay crop is produced, as a rule, the year after the grain crop is harvested. When seeded with spring grains the timothy seed, together with the clover or grasses to be grown in mixture with it, is sown at the same time as the grain. When winter grain is used as a nurse crop either a portion or all of the timothy seed may be sown with the grain or in the spring with the clover. When sown in early spring the timothy may be broadcasted with one of the various types of hand seeders and left on the surface of the soil to be covered by alternate freezing and thawing; or seeding may be delayed until the surface of the soil has become somewhat dry, when the seed should be covered with a spike-tooth harrow.

Timothy may be sown alone in the fall and a crop of hay harvested the following season. In the latitude of northern Ohio and southern New York the best results may be expected when the seed is sown from about August 25 to September 15, though an excellent stand is sometimes obtained when sown as late as October 1. If clover is to be grown with timothy, the clover seed may be sown on the field early in the spring and left on the surface of the soil to be covered by freezing and thawing.

Timothy seed always should be sown on a well-compacted seed bed, otherwise the conditions will be unfavorable to the proper development of the young plants.

The quantity of seed to be used will depend somewhat on the condition of the soil, but on the average from 10 to 12 pounds per acre have been found quite satisfactory. If mixed with clover, from 8 to 10 pounds of timothy and 10 pounds of red clover, or 5 pounds of red clover and 3 pounds of alsike clover are generally recommended.

Management of Timothy Meadows.

Timothy usually is grown in rotation with other crops, the timothy commonly occupying the land for two or three years during each rotation. Where there is a good stand of timothy the yields may be increased by top-dressing the meadows with either farm manure or commercial fertilizers. The former may be spread on the meadow during the fall, winter, or early spring. Commercial fertilizers should be spread on the land in the spring, soon after the growth of grass has commenced. When normal prices prevail, nitrate of soda may be used alone at the rate of 100 to 200 pounds per acre, or it may be used in combination with 150 to 250 pounds per acre of acid phosphate.

Timothy meadows may be pastured to some extent after the hay crop has been harvested. When the meadow is to produce a hay crop the following year, however, care should be taken not to let the stock graze the grass very closely, and when the ground is soft animals should be kept off the meadow.

Harvesting the Hay Crop.

Timothy growing in a mixture consisting largely of red clover should be cut when the clover is in full bloom or just past full bloom.

When timothy is growing alone it should be cut as soon as possible after the plants have passed the stage of full bloom.

If timothy is to be harvested for seed, it should be cut after most of the heads are mature and when the seed is beginning to shatter from the tips of the earliest spikes. It may be cut with a grain binder, shocked until cured, and thrashed with an ordinary thrashing machine. The yield of seed usually varies from about 200 to 300 pounds per acre, though larger yields are sometimes obtained. If the ripe timothy is harvested without much damage from rains, the straw has considerable feeding value.

TEST CRIMSON CLOVER SEED.

Samples of lots of crimson clover seed now on the market tested recently by the department usually have contained about one-third of dead seed, and in many samples more than two-thirds of the seed was dead. It is important, therefore, that farmers know the quality of the crimson-clover seed they intend to sow.

Every lot of seed should be tested for germination, and then seeded heavily enough to insure getting a stand. If the present supply of seed of low germination is sowed without testing and at a usual rate of seeding poor stands and failures will follow even under favorable weather conditions.

FALL ARMY WORM.

Causing Damage in West—Attacks a Variety of Cultivated Crops—Control Measures.

Reports from Oklahoma and Kansas indicate the injurious abundance of the fall army worm. This insect is a hairless, striped caterpillar, about 1½ inches in length. It attacks a great variety of cultivated crops, but is especially injurious to grass, corn, sorghum, kafir, millet, and alfalfa. The worms can be controlled when found attacking these crops by adopting the following measures:

Summary of Control Measures.

1. Provide yourself with a spraying apparatus and keep on hand several pounds of some standard insecticide, such as arsenate of lead, arsenate of zinc, or Paris green.

2. Watch carefully the grass growing among the cultivated field crops in the bottom lands or in the low places of the fields, and upon the first indication of the presence of these caterpillars apply poison spray as recommended below.

3. In case of a general invasion, after the caterpillars have gone down into the ground in order to change to the next stage, which is the pupa, many of them can be killed by cultivating the ground wherever this is possible.

4. When the caterpillars are on the march or are starting in on one corner of a field of grain they can be headed off by plowing a deep furrow directly in front of them. The larvæ falling into this furrow can very readily be killed by dragging a log through it. Where the whole field is infested, plow a furrow around it so as to keep them out of the surrounding fields. Furrows should be kept free from rubbish so that the larvæ will have no means of crossing to the farther side.

5. Grass and other vegetation that has no value may be sprayed with a mixture of Paris green and water, 2 pounds to 50 gallons of water. However, this grass should not afterwards be used for forage.

Growing grasses and other forage crops intended for use at a considerable later date should be sprayed with either one of the following mixtures:

(*a*) Arsenate of lead, powder form, 1 pound; water, 50 gallons.

(*b*) Arsenate of lead, paste form, 2 pounds; water, 50 gallons.

When corn is infested either one of the following poisonous mixtures may be applied.

(*a*) Arsenate of lead, powder form, 2 pounds, or, paste form, 4 pounds; water, 50 gallons.

(*b*) Paris green, 1 pound; lime, freshly slaked, 2 pounds; water, 50 gallons.

(*c*) Arsenate of zinc, 1 pound; lime, freshly slaked, 1 pound; water, 50 gallons.

Never use white arsenate on plants; it will burn them.

6. An immense amount of good also can be accomplished in the way of destroying these worms by the use of a poisoned bait which is scattered broadcast over the infested field. This mixture is made by taking 50 pounds of bran and mixing with it either 1 pound of Paris green or 2 pounds of powdered lead arsenate, to which is added 2 gallons of low-grade molasses and 6 finely chopped lemons. This is especially recommended for fields containing mixtures of grass and cowpeas, cowpeas and sorghum, or fields in which grass has been consumed by the caterpillars.

Caution.—Do not pasture stock in fields where the grass or other crops have been sprayed with a poison mixture until after heavy rains have fallen and not before three weeks after the application of the insecticides.

COTTON-FUTURES ACT.

Measure Reenacted with a Few Changes as Part of Annual Appropriation Act.

The annual appropriation bill for the department just passed by Congress contains a reenactment, effective September 1, 1916, of the United States cotton-futures act, with a few changes. Section 11 of the present law, which taxes orders sent abroad for the making of future contracts on foreign cotton exchanges unless certain conditions were complied with, will be omitted.

A new section, known as 6a, is inserted in the bill, which provides an optional contract under which parties may, by agreement, without being subject to tax, contract that under certain specified conditions the buyer may demand delivery of the basis grade named in the contract.

Another modification which will be of interest and assistance to the trade is the authority conferred on the Secretary of Agriculture in case of disputes to include in his findings, even though only one question be referred, a complete classification of the cotton for the purpose of delivery on future contracts. Under the old law the authority of the Secretary was confined to a determination of the specific question of grade, quality, or length of staple referred to him by the parties. In other words, if the dispute involved grade only, and the cotton was found to be gin cut, which is a question of quality, the Secretary had no authority to include a statement as to gin cut in his findings.

Government officials in charge of the matter call especial attention to the facts that the new act will not become effective until September 1, 1916, and that the old act of August 18, 1914, will remain in full force until the beginning of next month.

The rules and regulations of both the Treasury and the Agricultural Departments, with slight modifications and additions necessitated by the changes made in the law, will be reissued shortly after approval of the bill by the President, so that there will be no disturbance whatsoever to the trade. The official cotton standards of the United States, heretofore established, will be readopted and promptly promulgated, so as to be in force when the new act becomes operative.

GROWTH OF EXTENSION WORK.

An increase since the beginning of the present calendar year from approximately 6,800 to 15,455 in the number of women in the South enrolled in home demonstration work, carried on under the auspices of the department and State agricultural colleges, in shown in figures for enrollment, June 30, 1916, just announced by the Office of Extension Work South. In the same period, the number of girls enrolled in the canning, poultry, and other agricultural clubs carried on under the supervision of the same office increased from approximately 42,500 to 47,749.

The extension work among girls and women was being carried on at the end of the fiscal year in 420 counties in all of the 15 Southern States, through 420 county agents and 50 specialists. In addition, North Carolina had 200 subagents and Alabama 16 assistant county agents, who devoted their time to the extension activities. The largest enrollment of the girl demonstrators was in the canning clubs, which had 32,965 members. In the poultry clubs 10,205 girls are learning, through their local groups, under expert leadership, the details of raising domestic fowls. In the clubs devoted to bread making, 3,721 girls were enrolled, and in other clubs, 858.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., AUGUST 30, 1916. No. 4

FALL GARDEN IN SOUTH.

Many Sections in Southern States Adapted to Vegetable Growing in Fall and Winter Months.

Home gardeners in many sections of the South and Southwest where crops have been gathered or are now nearing maturity need not reconcile themselves to the existence of bare or unproductive land from now until next spring, according to garden specialists of the department. They may plant seeds from now until October or November and should, as a result, have fall, winter, and spring vegetables. The successful fall garden is a possibility with nearly all vegetables grown in spring and summer, except in areas of high altitude and in the more northerly portions of the region.

In many sections of the South, tomato plants have succumbed to the strain of high temperatures and dryness. In some localities they will live and continue to bear until fall, but in others they will not survive. A new crop should be planted now, and it may be profitable to try the experiment of planting both in the open ground where the plants are to remain and in frames for transplanting. The frames or beds should be located in a relatively cool, shady place. The same plan of field and frame planting may be used for cabbage seedings. With this crop, promising results have already been obtained by planting several seeds in a hill and thinning to one plant. If the field planting should not survive, however, in some instances, the grower, it is pointed out, is protected by having on hand the frame-grown plants. Ordinarily the seed planted direct to the field will produce the earlier crop.

Among the vegetables which may be planted at practically any time during the summer, with fair assurance of success, are beans. Bush squash may also be planted even in the hottest weather if they have not been made a part of the garden at an earlier season. With the beginning of August practically the entire list of ordinary vegetables is open to the fall gardener for choice. Beets, parsnips, carrots, celery, sweet corn, radishes, lettuce, and peas may be planted at this time, many of them in succession crops at frequent intervals. Later in the month and during the early part of September kale, spinach, mustard, turnips, collards, and parsley may also be planted. During September onion sets should be put out, and in October, and even later, onion seeds may be planted for a spring crop.

Among the crops of these late plantings which the southern gardener will find available for winter use are beets and the other root crops, such as parsnips and carrots, and kale, collards, spinach, and mustard. Many of the plants, he will find, may be carried by slight protection even into quite cold weather without suffering damage. To the crops which will be carried over for development in the early spring should be added salsify, or oyster plant, which may be planted practically any time during the late summer or early fall.

The following specific directions for fall planting of certain seeds in the South have been prepared by the department's plant specialists:

Beets.—Beets planted in the South in August and early September will produce a crop for late fall and early winter use. Where hand cultivation is to be given, sow the seed in drills 14 to 18 inches apart and cover to the depth of about 1 inch. For horse cultivation the rows should be 2½ feet apart. As soon as the plants are well established, thin them to a stand 2 to 3 inches apart. Give frequent shallow cultivation. The beets may be left in the ground through the winter, to be pulled when wanted.

Varieties recommended: Crosby's Egyptian, Bassano, Early Eclipse, and Blood Turnip.

Turnips.—Turnip seed may be sown during the latter part of August and throughout September and the first half of October. Sow turnip seed thickly, in rows 15 to 18 inches apart, and when the plants reach a

(*Continued on page 3.*)

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

FEDERAL-AID ROAD ACT.

Secretary of Agriculture Discusses Important Features of the Newly Enacted Law.

At a meeting of the State highway officials held August 16, 1916, in Washington, to discuss tentative rules and regulations for carrying out the Federal-aid road act, the Secretary of Agriculture made the following statement:

"The Federal-aid road act and another law—the cooperative agricultural extension act—that the department is charged with the duty of enforcing establish a new principle in American government—the principle of cooperation between Federal and State officers. They are the only laws I recall which recognize and insist upon this principle. They are therefore very significant. Heretofore Federal and State officers have too frequently looked at one another across the line, sometimes with apprehension as to what the other was going to do or think, sometimes with jealously, not infrequently with friction. We serve the same people. They have a right to the best service of the representatives of both jurisdictions. You represent the States. I represent the Federal Government. Together we are charged with the execution of a very difficult and very important law.

"I need not emphasize before you the importance of good roads. Most intelligent people who think about good roads know that they are essential to comfortable living, essential to proper community development, especially to the development of rural life, to efficient production and orderly marketing of farm products, to good schools, and to the development of a satisfactory rural life.

"Many people, however, do not appreciate this; and I have occasionally met road officers who, when the importance of good roads was emphasized, have said: 'Yes; but they cost so much.' Apparently they have not thought how much more bad roads cost, not only in dollars and cents, but also in all those indirect ways for which one can make no definite calculation.

Large Expenditures for Roads.

"This law appeals to me as of especial importance, not so much because it carries with it out of the Federal Treasury an appropriation of 85 millions of dollars, not

because it will be met by an appropriation of 75 million or more out of State funds, if all the States accept the act, but because, as great as is the aggregate, it is relatively insignificant in comparison with amounts the States are now annually expending and will spend during the period covered by the act.

"I remember that, on one occasion, when I was speaking to a public official about the road bill and suggested that we ought to begin with a modest initial appropriation of three, four, or five millions of dollars, he expressed surprise and said that such an amount would not get us anywhere; that the expenditure by the Nation of a few millions of dollars for roads would be merely trifling with the matter. I asked him if he knew what the people of the Nation were contributing annually for road building; that the Nation was already expending the equivalent of nearly half of what the Panama Canal has cost. Of course he did not. And the majority of people do not realize that the Nation is expending approximately $250,000,000 a year for roads.

A Dollar's Result for Each Dollar Expended.

"The main question that I am immediately concerned with, that the people of the Union are immediately concerned with, is whether we shall get a dollar's result for every dollar we expend for roads. I am quite sure that if we do so and we can convince the people that we have done so, they will be willing to put much more money into good roads where they are needed. Therefore, the matter of administering this law, of devising good road systems, of careful selection of roads, of formulating projects, of developing plans and specifications, of having all matters considered on their merit by competent men, seem to me to lie at the root of this business. If, as the result of this act, the people are induced fully to realize the necessity of placing skillful and experienced men in charge of road building and road maintenance, a great advance will have been made and the efforts of those who labored to secure the legislation will have been rewarded.

Employment of Experts.

"I assume that as a matter of necessity this law will require the employment in every State of experts, of real experts. This word is very much misused and abused, as the word 'theorist' is. I frequently hear a contrast drawn between the theorists and the practical men. There is no basis for it. The classification ought to be into good theorists and bad theorists, of practical men and unpractical men. A really good theorist is highly practical; and so is a real expert. The public is somewhat suspicious of experts, because, I think, so many people pose as experts who are not. When the public sets an expert aside, it is worth while to inquire carefully into the expert's claims and competency.

"I repeat that this act will necessitate trained intelligence in the service of the State as well as in the service of the Federal Government. The act requires the State to accept it. That, as I understand it, implies the assent of the State to every provision of the act. One of these provisions is that projects, plans, specifications, and contracts shall be submitted and approved; and I have a suspicion that plans and specifications will not be approved unless they are submitted by people who know about such things. So the assent of the State involves the calling of trained men into the service of every State which is now without them.

"The law involves another thing, the pledge of the faith of the State to meet in full the Federal appropriation for the entire period covered by the act. The State legislature may not be able to appropriate money one year for the whole period covered by the act, but it can pledge the faith of the State to meet the financial provisions of the act for the period covered by it. This is as it should be. It would be unfortunate if it were otherwise. It would be wasteful not to make plans at the outset for the full period covered by the act; it would mean piecemeal road building and much dissipation of effort and misdirection of funds. These requirements hold whether the State as such, under the existing law, may engage in road building or not. The provision that where the State may not engage in highway improvement, the money may be secured if counties raise an amount sufficient to meet the apportionment to the State, involves the necessity on the part of such counties of raising an amount sufficient to meet the full apportionment for the State, the existence of a highway commission, and compliance with all the other terms of the act. I speak of this because there are evidences that individual counties think that if they raise a certain sum of money they will of necessity get a corresponding sum from the Federal Treasury. That is not my construction of the act and not the one that will be likely to prevail.

"The duty will rest upon you gentlemen who represent the States of informing the people as to the meaning of this legislation and as to the procedure under it, because the initiative under the law lies with you. We are directed to cooperate with you, with the State through the State highway department. It is your duty, if your State accepts the law, to agree with us on roads to be constructed and to submit projects, plans, and specifications. Therefore, individuals, associations, and counties will of necessity, take up such matters directly with you, and we shall hear from them through you for the most part.

Roads and Trails for the National Forests.

"There is a section of the act which contemplates only parts of the country. The Nation owns great areas, especially, in our western States, and is acquiring areas in certain others of our States. The Nation owes a duty to the people living in the national forests or near them. In many instances communities struggling for development have been compelled to rely too exclusively for necessary improvements on taxes from private property or on private contributions. It is true that under the law we have heretofore been setting aside for road improvement 10 per cent of the gross receipts from the forests. This has been no inconsiderable sum, nearly three-quarters of a million dollars since the act was passed, and approximately $278,000 for the present fiscal year. But in some sections there are no receipts from the forests, and communities have been left to struggle as best they could. The Government in many instances is the owner of the greater part of these assets, and it is only equitable and wise that the Federal Government should assist them. So there is appropriated by the act $10,000,000, a million a year for 10 years, for the construction of roads and trails in or near the national forests, with the understanding that communities interested will cooperate financially and otherwise. Those of you who represent forest States, as a matter of course, will think of coordinating work under your direct State road funds and those arising under the general provisions of the road act with the work to be undertaken under this special appropriation.

Legislation to Aid Distribution.

"I am hopeful that great benefit will accrue to the Nation from the wise and efficient administration of this act. It is one of a series of measures recently conceived and enacted for the development of rural life. We began by formulating a law on similar lines—the cooperative agricultural extension act. We then enacted the cotton-futures law to give the cotton farmers and dealers standards to trade on and to secure supervision of the operations on futures exchanges, a similar law to establish standards for grains and to regulate interstate and foreign commerce in them, and the warehouse bill for the better storage of staple crops and for the emission of a warehouse receipt which should be good collateral for loans. We have given an opportunity to the national banks to lend funds on farm mortgages, and have extended the period of maturity for farm paper and adopted the Federal farm loan act. All these lie in the field of distribution as does this road act, which lies at the foundation of satisfactory and orderly marketing.

Attitude of Department of Agriculture.

"I have come here to-day mainly to meet you and to express my appreciation of the very ready response you have made to the request of the department to give it informa-

tion and the benefit of your experience in framing the rules and regulations for the administration of the Federal-aid road act. I am a very great believer in cooperation, and I think one saves much trouble by beginning to cooperate at the outset.

"I appreciate the keen interest you have shown in the shaping and development of this legislation. I shall do everything in my power to facilitate your tasks, to aid you in the discharge of them so far as the powers of the department permit, whether through this law or through the direct appropriations to the Office of Public Roads. I ask your full, generous, and efficient cooperation. If we view matters broadly and generously, we shall have no difficulty. I pledge that the Department of Agriculture will approach the administration of this law in that spirit, and will cooperate heartily with you to give the people of the Nation full value for the money which they have pledged under this act."

FALL GARDEN IN SOUTH.

(*Continued from page 1.*)

height of 4 or 5 inches begin thinning, using the young plants for greens. For good roots thin the plants to about 3 inches apart in the row. Keep the land well cultivated to keep down the weeds and to leave the surface loose and friable. In a small garden cultivation with a hand cultivator is the most practicable. Turnips may be left in the ground until needed for the table, or may be pulled as soon as they are mature and stored in a cellar or buried in banks or pits. The varieties of turnips commonly grown in the South are Purple Top Globe, White Globe, Seven Top, White Milan, and Yellow Aberdeen.

Collards.—Collards can be grown in the same way as outlined for turnips.

Kale.—Kale can be grown in the open throughout the winter in practically all sections of the South. Sow the seed in September and October in drills 18 inches apart for hand cultivation and 30 inches apart for horse cultivation. As soon as the plants reach a height of 4 or 5 inches they should be thinned. The plants pulled may be used for greens. The cultivation for kale should be the same as for turnips.

Varieties recommended: Dwarf Curled, Tall Scotch, and Siberian.

Spinach.—Spinach is one of the best crops grown for greens and should be found in every home garden. It can be grown in the open during the autumn and winter in all sections south of Norfolk, Va. Sow the seed in the latter part of August, in September, or October, in drills 15 to 18 inches apart, at the rate of 1 ounce to 100 feet of row. When the plants begin to crowd in the row, they should be thinned. The larger plants are selected first, and the smaller or later ones are thus given room to develop.

CARE OF MILK CANS.

Thorough Washing and Sterilization a Necessity in the Production of Clean Milk.

In justice to the farmer, milk dealers should give considerable attention to the question of washing the cans before they are returned. If the cans are allowed to go back unwashed to the farmer, it is a very difficult task for him, with his limited facilities, to clean them.

In a circular letter recently sent to milk dealers by the Dairy Division of the department, it was pointed out that bacterial counts made from cans which had been washed and rinsed in the ordinary manner showed that there were from 300,000 to 18,000,000 bacteria in each can, with an average of 4,600,000. If 10 gallons of milk were put into one of these cans there would be added more than 100 bacteria to each cubic centimeter of the milk. That is to say, this is the least number that would be added. Whereas, it was pointed out, with a little steaming these same cans could have been rendered practically sterile.

One dealer who recently installed a modern washing machine employed a bacteriologist to test the results. It was found that less than 200,000 bacteria were in a can, and among them were no undesirable types. Bacterial counts of cans treated by a less efficient steaming device which this dealer had formerly employed ran as high as 20,000,000 bacteria to the can, including some undesirable kinds.

There are a number of different types of cleaning machines on the market. The aim of all the efficient ones, however, is the thorough cleansing with washing powder and water, rinsing, sterilization with steam, and rapid drying. After this the can should be covered and kept from contamination.

One of the simplest of the machines is a jet device, by means of which sprays of cold and hot water and of steam are successively forced into the can. This type also is equipped sometimes with a drying attachment by means of which a draft of dry air is forced into the can. Another type is the brush machine, in which cans are brushed out with washing powder and water and then rinsed. After washing they may be steamed by a spray of steam. Some of the largest machines are fitted with powerful pumps, the cans in an inverted position being run through the machine and sprays of soap and water, rinse water, hot water, and steam successively forced into them under considerable pressure. They are then dried in the same machine.

The drying of the cans is an important factor, for it not only leaves them in a much better condition, but it tends to prevent rust. The cover also must not be neglected. It is as important that it be as thoroughly cleansed and sterilized as the can itself. It is not a good plan to put the cover on the can until the latter is quite dry. In the interval the can should be kept in a clean place where there is no dust or contamination.

On the farm, cans, pails, and other utensils may be sterilized very efficiently with an inexpensive sterilizer which is fully described in Farmers' Bulletin 748. This bulletin may be obtained upon application to the department.

PARENTS AND CLUB WORK.

Parental Aid and Encouragement Essential to Success of Club Members.

An illustration of the great importance of the attitude of parents toward the work of members of the boys' agricultural clubs which have been organized throughout the country by the department is found by specialists in cooperative demonstration work in two cases reported from the same State. The incidents are accepted as showing the value of parental sympathy and consideration, particularly in the solution of the problem of keeping the members of the younger generation on the farm.

In one case it was found that the boy of the family was helped and encouraged from the time he first joined a corn club. His father permitted the use of one of the best acres on the farm, gave him barnyard manure, and allowed the use of the necessary horses and machinery. The young club member produced more than 100 bushels of corn on his single acre the first year and has been consistently successful since. He has even established a reputation as a breeder of fine seed corn. During the four years of his membership in the corn, pig, and other clubs, he has won more than $400 in prizes, and, with his profits, has acquired ownership of seven head of pure-bred Duroc Jersey hogs, six head of well-bred cattle, and a horse. The home is said to be ideal, the father and son being reported as "chummy as school boys." The boy has no thought of taking up life in the city, but is planning a constructive future on the farm.

In the second case the results have been wholly different. The young son of this family joined a Kafir club, but when the crop was gathered the grain was placed in a general farm bin and he received no value from it. The following year he joined a pig club; and when his father called attention to the lack of feed, he hired himself to a neighboring farmer to secure funds. The money which he earned was, however, pocketed by the father. Wholly discouraged, the young boy shortly afterwards ran away from home and is now working in a city of a neighboring State.

The incidents have been used by the State demonstration agent of the State in

which they occurred as the text for an urgent appeal to all parents to encourage their children in the constructive work they are undertaking in the clubs. One factor which will be helpful, it is pointed out, is permitting the young people to receive the full financial profits of their industry.

BIRD REGULATIONS.

Open Seasons for Migratory Birds under Federal Regulations.

The new regulations for the enforcement of the migratory-bird law were approved by the President August 21, 1916, and became effective on and after that date. The schedule printed below shows the open seasons when hunting the birds named is permitted under these regulations. Hunting at other seasons is prohibited. Hunters, however, should consult the State laws, as the Federal regulations will not be construed to authorize hunting within a closed period prescribed by the State occurring within the open season under the Federal regulations.

Shooting is prohibited between sunset and sunrise in both zones. Insectivorous birds are protected indefinitely in both zones and no open season is allowed. Band-tailed pigeons, cranes, wood ducks, swans, curlew, willet, upland plover, and smaller shorebirds are protected everywhere until September 1, 1918.

Open seasons for migratory birds (dates are inclusive).

ZONE 1.

WATERFOWL (except swans and wood ducks), COOTS, GALLINULES, and JACKSNIPES:
Maine, New Hampshire, Vermont, Massachusetts, New York (except Long Island), Ohio, Indiana, Kentucky, West Virginia, Michigan, Illinois, Iowa, Kansas, Nebraska, and Missouri ..... Sept. 16–Dec. 31.
Rhode Island, Connecticut, Long Island, New Jersey, Pennsylvania, Washington, Oregon, Nevada, and Utah ..... Oct. 1–Jan. 15.
Wisconsin, Minnesota, North Dakota, South Dakota, Montana, Idaho, Wyoming, and Colorado ..... Sept. 7–Dec. 20.
RAILS (except coots and gallinules) .. Sept. 1–Nov. 30.
Vermont ..... Closed until Sept. 1, 1918.
BLACK-BREASTED and GOLDEN PLOVER and GREATER and LESSER YELLOWLEGS:
Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York (including Long Island), and New Jersey ... Aug. 16–Nov. 30.
Vermont, Pennsylvania, Ohio, Indiana, Kentucky, West Virginia, Michigan, Illinois, Iowa, Missouri, Nebraska, Kansas, Colorado, and Nevada ..... Sept. 1–Dec. 15.
Wisconsin, Minnesota, North Dakota, South Dakota, Montana, Idaho, and Wyoming, Sept. 7–Dec. 20.
Washington and Oregon ..... Oct. 1–Dec. 15.
Utah ..... Closed until Sept. 1, 1918.
JACKSNIPES (same as waterfowl, coots, and gallinules).
WOODCOCK ..... Oct. 1–Nov. 30.
Illinois, Kentucky, and Missouri, Closed until Oct. 1, 1918.

ZONE 2.

WATERFOWL (except swans and wood ducks), COOTS, GALLINULES, and JACKSNIPES:
Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Arkansas, and Louisiana .. Nov. 1–Jan. 31.
Oklahoma, Texas, New Mexico, Arizona, and California ..... Oct. 16–Jan. 31.
RAILS (except coots and gallinules) ... Sept. 1–Nov. 30.
Louisiana ..... Nov. 1–Jan. 31.
California ..... Closed until Sept. 1, 1918.
BLACK-BREASTED and GOLDEN PLOVER and GREATER and LESSER YELLOWLEGS:
Delaware, Maryland, District of Columbia, and Virginia ..... Aug. 16–Nov. 30.
South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas .. Nov. 1–Jan. 31.
North Carolina, Tennessee, Arkansas, Oklahoma, New Mexico, and Arizona .. Sept. 1–Dec. 15.
California ..... Closed until Sept. 1, 1918.
JACKSNIPES (same as waterfowl, coots, and gallinules).
WOODCOCK ..... Nov. 1–Dec. 31.

COOPERATIVE DAIRYING.

Usually Results in Elimination of Waste, More Economical Production, and Better Cows.

There are so many leaks in the dairy business that only by the use of the best business principles can it be made permanently profitable. Individual cows must each make a profit over the cost of feed; this can be determined only by weighing each cow's milk and the feed that she consumes. The old argument that the best cows are known may have some foundation, but few men know the poorest cows, and the latter go to make up the average as well as the good cows. No dairy is better than its average production. If this is too low, the herd is not paying a profit. Business principles must therefore be applied to lowering the cost of milk production. Efficiency is as much a necessity on the farm as in the factory. Few men feed their cows in proportion to the quantity of milk produced, yet what could be more simple and more nearly right? With little regard for her needs, feed is put before the cow in plenty if it is cheap and in less quantity if the price is high. Cows use about 60 per cent of their feed merely to keep their bodies working, and it is the quantity that is fed above this fixed necessity that furnishes the material for the milk. Too often the dairyman says "I would do all the up-to-date things if I had the time." Can the storekeeper afford to run his business without keeping books? Yet that is what the farmer is doing.

Benefits of Cow Testing.

Working in cooperation, dairymen can obtain the benefits of business methods at a very small cost through the organization of a cow-testing association. An organization of this kind that hires an expert to determine the feed cost of milk or fat production for each cow in the herds of the members is easily possible. Such an expert travels from farm to farm, spending usually one day at a place. Each cow's milk is weighed and tested, as is her feed. An account is opened in the ledger for each animal and at the end of the year the profit or loss of each one can be ascertained. The heifers of good cows should be selected and the poor cows should go to the slaughterhouse, otherwise they may be the means of ruining the owner's business. A cow-testing association is a cooperative organization with local officers, and one that can be of use also for advertising the sale of cattle. The results obtained with such advertising have often been remarkable. Dairymen and breeders are certain to be interested in such a movement for the bettering of the business.

At present about 350 of the organizations keep the records for about 150,000 cows owned by about 7,500 farmers. These men are realizing the benefits of cooperation.

The dairy business is well adapted for cooperative organization, and concerted effort by dairymen usually means much greater profits on milk and cream through the elimination of waste, the application of more economical methods of production and manufacture, and the development of more productive cows.

SHIPPING DEAD AND LIVE ANIMALS.

It has come to the attention of the department that in some instances shippers of live stock have violated the regulation of the department prohibiting the shipment of dead animals in the same car with live animals. The regulation, which was adopted February 10, 1915, and amended July 1, 1916, is as follows:

"No dead animal shall be transported, offered, or accepted for transportation in the same car with live animals from the original point of shipment in any State or Territory or the District of Columbia to or through any other State, Territory, or the District of Columbia."

The foregoing regulation is binding alike upon individual shippers, railroads, and other carriers. Violation of the regulation is punishable by a fine of $100. The original regulation, B. A. I. Order 210, and the later, amended regulation, B. A. I. Order 245, were promptly made public, but it is possible that some individual shippers are not familiar with the regulation. They should hereafter be careful to observe it. Failure by several railroads to observe the regulation has already resulted in prosecutions of them and the imposition of penalties.

DIRECTORY OF GAME OFFICIALS.

The seventeenth annual directory of officials and organizations concerned with the protection of birds and game in the United States and Canada, revised to July 15, 1916, has just been issued by the Bureau of Biological Survey of the department. It presents in convenient form the addresses of persons from whom information may be obtained concerning the game laws. It shows the date of establishment of each State commission or wardenship, the changes which occur in such offices, and the publications issued by game officials.

It also contains the names and addresses of the president and secretary of each National, State, and Canadian club or association organized for the protection of birds and game. The Audubon societies, organized for the study and protection of birds, are also listed, together with the names and addresses of the presidents and secretaries.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., SEPTEMBER 6, 1916. No. 5

AGRICULTURAL APPROPRIATION ACT FOR 1917.

$24,948,852 Granted to Continue and Increase Work of Department of Agriculture—Other Acts Bring Total Available for Agricultural Purposes for This Fiscal Year up to $36,128,852—Important New Legislation Enacted.

The Agricultural appropriation act for the fiscal year ending June 30, 1917, which was approved by the President on August 11, 1916, appropriates $24,948,852 for continuing the work of the department, for carrying out new legislation, and for developing new agricultural projects. This is an increase of $1,977,070 over the appropriation for the fiscal year 1916. This total, however, does not include $600,000 for printing and binding, $3,000,000 for carrying out the provisions of the meat-inspection act, $1,580,000 for extension work in agriculture and home economics under the cooperative agricultural extension act, $5,000,000 for the cooperative construction of rural post roads, and $1,000,000 for roads and trails in the national forests under the Federal-aid road act. If these additional items, as shown in the accompanying table, are included, it will be seen that the sum of $36,128,852, an increase of $8,124,770, will be available to the department for all purposes. This figure, however, does not include the $70,000,000 made available, under the Federal-aid road act, for rural post roads during the next four years, the $9,000,000 for roads and trails in the national forests available under the same act during the next nine years, or the $2,000,000 appropriated for continuing the purchase of eastern forest lands under the terms of the Weeks law during the fiscal year 1918. It does not show sums which will be available in successive years for agricultural extension work under the cooperative agricultural extension act. The appropriation carried by the act will be increased by $500,000 each year, until the fiscal year 1922–23. For that year, and annually thereafter, there will be available to the States from this source $4,580,000, and the States themselves must contribute at least $4,100,000.

It must be borne in mind in considering these various totals that the item of $1,250,000 for the eradication of foot-and-mouth and other contagious diseases of animals is an emergency fund and will not be expended unless there is an outbreak. The foot-and-mouth disease has now been eradicated.

IMPORTANT NEW LEGISLATION.

The Agricultural appropriation act contains several important pieces of new legislation and makes provision for the extension of many lines of existing work and for the inauguration of new agricultural projects. Among the more important items are the following:

- **The U. S. grain-standards act. (See Weekly News Letter, vol. 4, No. 3.)**
- **The U. S. warehouse act. (See Weekly News Letter, vol. 4, No. 3.)**
- **Reenactment of the cotton-futures act, with amendment.**
- **Appropriation of $65,000 for market news service for live stock, meats, and animal products.**
- **Cooperative employment of marketing agents in the various States in marketing work.**
- **Appropriation of $136,600 for market news service for fruits and vegetables.**
- **Appropriation of $3,000,000 for continuing the purchase of forest lands under the Weeks law, in the southern Appalachian region and the White Mountains.**
- **Appropriation of $175,000 for experiments and demonstrations of the best methods of obtaining potash from kelp.**
- **Appropriation of $50,000 for conducting experiments in producing dyes from material grown or produced in the United States.**
- **Amendment of the seed-importation law which permits the exclusion of seed which contains an excess of dead seed, dirt, or other adulterants.**
- **Appropriation of $10,000 for the development of a sugar-beet seed industry.**
- **Increased appropriations to extend the weather service in the vicinity of the Panama Canal and in the Caribbean Sea and Gulf regions.**
- **Increased appropriation for cooperative demonstration work outside of the cotton belt.**
- **Authority given to the Secretary of Agriculture to permit prospecting in and development and utilization of mineral resources of the eastern national forests.**

Analyses of Appropriations.

The various new projects and extensions of existing activities made possible by the act are discussed in the following analyses of appropriations available during the fiscal year 1917, for the several bureaus:

Weather Bureau.

EXTENSIONS IN STORM-WARNING SERVICE.

The appropriation for the Weather Bureau is increased by $81,210. Of this sum, $30,000 will be used in extending the weather and storm-warning service in the vicinity of the Panama Canal and various points in the Caribbean Sea and Gulf regions. The number of points from which reports of hurricane conditions are obtained will be increased, thereby making possible the earlier and more complete preparation and dissemination of warnings of the approach of these destructive storms.

The extension of the service, in addition to its value to the residents of the Southern States, it is believed, will be of increasing value to the ships using the Panama Canal. The Weather Bureau also will be able to issue for southern waters forecasts of general wind and weather conditions and their changes from day to day. These should be of special value to marine commerce passing to and from the canal. These warnings will be transmitted, as in the past, to ships at sea by wireless telegraphy in cooperation with the naval communication stations at Radio, Va., and Key West, Fla.

An increase of $10,000 permits the establishment of additional stations and the better organization of weather observation work in Alaska. Telegraphic observations and reports which have important bearing on the preparation of general weather and storm forecasts for the United States are secured from the region. Additional data to determine and establish the climatic conditions of this great region with its growing agricul-

tural and commercial intersts also will be collected.

A further increase of $10,000 will be used in extending the river and flood service and the frost-warning service.

The new act also contains provision for a new Weather Bureau building at Cape Henry, Va., one of the most important coastal stations of the Weather Bureau. The new building will be erected at a point which commands a full view of the fairway of vessels, which will greatly facilitate its usefulness in observing and reporting the vessels passing in and out of the Capes.

Bureau of Animal Industry.

CONTROL OF PESTS AND DISEASES.

For the eradication of the Texas-fever tick and for promoting live-stock production and dairying in areas freed of ticks, $632,400, an increase of $194,500, is included in the bill. This increase permits the enlargement of the work in Louisiana, Mississippi, Georgia, Alabama, and Texas. These States and many counties therein are providing funds for the building of dipping vats and for the employment of local helpers, and it is the desire of the department to cooperate actively in as many counties as possible with the funds available. The department's representatives feel that the educational and demonstration work now has been practically completed and that the people in the quarantined areas apparently are ready to take up systematic eradication as rapidly as the necessary cooperation can be accorded.

In the item for tick eradication is included $50,000 which may be used for live-stock and dairy demonstration work in areas freed of ticks, in cooperation with the States Relations Service.

Contagious abortion.—To develop means of controlling contagious abortion in cattle, which is prevalent throughout the United States, a new item of $50,000 is made available. This sum will be used for experiments concerning the cause, modes of dissemination, and methods of treatment and prevention. The preparation of vaccines and protective serum also will be undertaken with a view to devising a method by which animals may be immunized.

Dourine.—For the investigation, treatment, and eradication of dourine, $75,000 is allowed.

Poisonous plants.—An increase of $5,000 is granted for the purpose of extending investigations of plants poisonous to live stock. The eating of poisonous plants has caused great losses in live stock. Profitable results have followed the work already done in establishing the poisonous effect of various plants on different species of animals and in determining means of preventing such losses.

Hog cholera.—For hog-cholera work, including the inspection of hog- cholera serum plants and the enforcement of the virus-serum-toxin act, there is made available approximately $360,000, of which $35,000 is to be devoted to researches concerning causes, methods of spread, and methods of treatment of the disease. A considerable part of the appropriation will be used in demonstrating means of controlling hog cholera in selected areas. Taking into consideration the unexpended balance from the special appropriation of $600,000, under the act of February 23, 1913, there will be available for hog-cholera work during the coming year a total of $405,000, an increase of $59,000.

Contagious diseases.—For the inspection of cattle for contagious diseases and the carrying out of the quarantine regulations and the acts governing the transportation of live stock and the importation of cattle, for the eradication of scabies in sheep and cattle, and for the tuberculin and mallein testing of animals, a total of $532,780 is allowed. This item shows a decrease of $75,000. This is due to the fact that the work of eradicating sheep and cattle scabies, which heretofore consumed an important part of this item, has been so successful that there remain under quarantine for sheep scabies only Texas and parts of Colorado and California, and for cattle scabies only a few counties in Texas. In all, 317,510 square miles have been cleared of sheep scabies and 242,196 square miles have been released from the cattle-scabies quarantine.

Emergency fund.—The various items do not include the appropriation of $1,250,000 which is made available for coping with any future outbreak of foot-and-mouth disease, rinderpest, contagious pleuropneumonia, or other contagious disease which threatens the live-stock industry. This sum will be expended only in case an outbreak of any of these diseases makes such action necessary.

Itemized statement of appropriations for the fiscal year ending June 30, 1917, as compared with appropriations for the fiscal year ended June 30, 1916.

Bureau or office.	Appropriation for 1916.	Appropriation for 1917.	Increase (+) or decrease (−).
GENERAL APPROPRIATIONS—AGRICULTURAL ACT.			
Office of the Secretary	$623,120	$688,160	+ $65,040
Weather Bureau	1,666,050	1,747,260	+ 81,210
Bureau of Animal Industry	2,585,536	3,020,746	+ 435,210
Bureau of Plant Industry	2,139,150	2,537,120	+ 397,970
Forest Service	5,553,256	6,549,735	+ 996,479
Bureau of Chemistry	1,066,381	1,153,801	+ 87,420
Bureau of Soils	327,935	503,735	+ 175,800
Bureau of Entomology	829,900	868,880	+ 38,980
Bureau of Biological Survey	446,290	578,230	+ 131,940
Division of Accounts and Disbursements	44,920	44,920	.....
Division of Publications	193,500	197,650	+ 4,150
Bureau of Crop Estimates	283,480	316,436	+ 32,956
Library	46,020	49,520	+ 3,500
Miscellaneous expenses	115,000	122,500	+ 7,500
Rent in the District of Columbia	123,689	123,689	.....
States Relations Service	2,821,840	2,969,680	+ 147,840
Office of Public Roads and Rural Engineering	586,465	599,200	+ 12,735
Office of Markets and Rural Organization	484,050	872,590	+ 388,540
Enforcement of the insecticide act [1]	.....	105,000	+ 105,000
Federal Horticultural Board [1]	.....	75,000	+ 75,000
MISCELLANEOUS APPROPRIATIONS—AGRICULTURAL ACT.			
Enforcement of insecticide act [2]	100,000	.....	− 100,000
Enforcement of the plant-quarantine act [2]	50,000	.....	− 50,000
Exchange of lands, State of Washington	50,000	.....	− 50,000
Domestic potato quarantine	100,000	.....	− 100,000
Demonstrations on reclamation projects	40,000	40,000	.....
International Dry-farming Congress, Denver, Colo	20,000	.....	− 20,000
International Farm Congress and Soil-products Exposition, El Paso, Tex.	.....	20,000	+ 20,000
National Dairy Show Association, Springfield, Mass	.....	15,000	+ 15,000
Cooperative fire protection of forested watersheds of navigable streams	100,000	100,000	.....
United States grain-standards act	.....	250,000	+ 250,000
United States warehouse act	.....	50,000	+ 50,000
Experiments and demonstrations in live-stock production in cane-sugar and cotton districts of the United States	60,000	60,000	.....
Experiments in dairying and live-stock production in semiarid and irrigated districts of the western United States	.....	40,000	+ 40,000
Naval stores investigations	5,000	.....	− 5,000
Eradication of foot-and-mouth and other contagious diseases of animals	2,500,000	1,250,000	−1,250,000
Dry farming and subhumid station, Oklahoma	200	.....	− 200
Committee to investigate rural credits	10,000	.....	− 10,000
Total	22,971,782	[3] 24,948,852	+1,977,070
APPROPRIATIONS FOR AGRICULTURE IN OTHER ACTS.			
Smith-Lever fund	1,080,000	1,580,000	+ 500,000
Printing fund	500,000	600,000	+ 100,000
Meat-inspection fund	3,000,000	3,000,000	.....
Cooperative construction of rural post roads	.....	5,000,000	+5,000,000
Cooperative construction, etc., roads and trails, National Forests	.....	1,000,000	+1,000,000
Deficiency act (eradicating citrus canker, $200,000; eradicating white-pine blister rust, $20,000; suppressing spread of rabies in wild animals, $75,000; fighting forest fires $57,300)	452,300	.....	− 452,300
Grand total for agricultural purposes	23,004,082	[3] 36,128,852	+8,124,770

[1] Carried last year under the miscellaneous items.
[2] Carried in new act as general appropriations.
[3] Does not include $2,000,000 appropriated under Weeks law for the fiscal year 1918.

Appraisal of animals.—An important amendment to this section provides that hereafter payment for animals destroyed in coping with such diseases may be made "on appraisement based on the meat, dairy, or breeding value, but in such cases no appraisement of any animal should exceed three times its meat or dairy value, and except in cases of an extraordinary emergency, a payment by the United States Government for any such animal shall not exceed one-half of any such appraisement." This amendment will enable the department hereafter to take breeding value into consideration in paying for pure-bred animals purchased and destroyed in combating foot-and-mouth disease.

INVESTIGATIONAL WORK.

The funds for dairy work have been increased $27,620. With this sum a number of projects already under way will be extended. The cheese-factory investigations, and especially the demonstrations of the practicability of establishing cheese factories in States and communities in the southern mountains and irrigated sections of the West where such factories do not now exist, will be enlarged. Increased activity is planned also in the establishment of cow-testing associations, in laboratory investigations pertaining to butter and condensed milk, and in the sanitary production of milk for market.

Animal husbandry.—In the appropriation for animal husbandry, an increase of $19,260 makes possible some new experiments and the enlargement of existing lines of activity. One of the new experiments has for its object the development of a double-purpose strain of shorthorn cattle. Foundation stock has been secured for breeding experiments, and the inheritance of beef and milking characteristics will be studied. This project will be carried on in cooperation with the Kansas Experiment Station. In pork-production work it is planned to enlarge research work on the effects of forage crops on the quality of pork. The remainder of the increase will be used in extending the scope of the range sheep-breeding work, in carrying out trap-nest experiments with poultry, and in investigations regarding the classification of American wools with a view to assisting the farmer in the production of this product by a study of wools in relation to natural grease, amount, fineness, length, and strength as affected by soil, climate, feed, type, and breed.

Meat inspection.—The act includes $344,500 for carrying out the provisions of the meat-inspection act. This sum is in addition to the permanent annual appropriation of $3,000,000 provided by the meat-inspection act.

Miscellaneous.—The act grants an appropriation of $37,000 for experiments in poultry feeding and breeding, including the work with ostriches. Twenty-five thousand dollars is made available for experiments in connection with the breeding and maintenance of horses for military purposes, and the usual appropriations for the maintenance of the Government experimental farms at Beltsville and Bethesda, Md., and for the carrying on of experiments in animal feeding and breeding in cooperation with State agricultural experiment stations are made.

Live-stock experiments.—The act also contains an item of $60,000 for experiments and demonstrations in live-stock production in cane-sugar and cotton districts, and an item of $40,000 for experiments in dairying and live-stock production in semiarid and irrigated districts in western United States.

Bureau of Plant Industry.

For carrying on the work of the Bureau of Plant Industry the new act allows $2,537,120, an increase of $398,020. The usual appropriation of $252,540 for the purchase and distribution of valuable seeds is included in this total.

An increase of $4,000 is allowed for the investigation of diseases of tobacco in the South, particularly the Granville tobacco wilt, and $2,500 for studying the possibility of controlling or eradicating "root rot," "black rot," and other tobacco diseases of the Wisconsin district.

An increase of $7,500 has been included for enlarging the work of fruit-disease investigations, especially for the investigation of general orchard diseases and for the investigation of the diseases of subtropical fruits.

An increase of $3,000 has been granted for investigations of cotton diseases and for extending demonstrations of methods of controlling cotton wilt.

An increase of $22,500 has been granted for cereal investigations, $5,000 of which will be used for enlarging investigations relating to diseases of flax and $17,500 for investigating diseases of cereal crops, especially the black rust and stripe rust of wheat, oats, and barley, for which diseases a total of $20,000 will be expended this year.

An increase of $30,000 was granted for the purpose of cooperating with the various States concerned in the eradication of the white-pine blister rust.

A new item for the eradication of citrus canker has been included, with an appropriation of $250,000. The act further provides that the unexpended balance (about $85,000) of the appropriation for this purpose carried in the urgent deficiency act may be expended during the present fiscal year. Accordingly, $335,000 is available for the fiscal year.

Increases have been granted of $5,000 for the breeding of disease-resistant citrus fruits, $2,500 for carrying on soil studies in connection with powdery scab of potatoes, and $5,000 for the enlargement of the work on plant-infesting nematodes.

Crop production and culture methods.—An increase of $10,000 has been granted for aiding the development and improvement of American strains of sugar-beet seed and for the establishment of a permanent sugar-beet seed industry in the United States. Increases have been granted also as follows:

Five thousand dollars for further investigation and demonstration of the new system of cotton culture and to cooperate with local organizations of cotton growers in order to develop and maintain superior varieties and produce larger crops of cotton; $5,000 for enlarging the work in connection with the production of drug and related plants, especially those yielding oil seed and essential oils; $1,000 for the enlargement of fiber-plant investigations, particularly with reference to sisal, flax, and hemp; $7,500 in order to extend experiments relating to water requirements of crops under irrigation, particularly on the Government reclamation projects; $5,000 for the inauguration of irrigation studies in Oklahoma at the Lawton station, with special reference to the production of truck crops and small fruits; $7,530 for the investigation of forage crops and the determination of the best methods for their management.

Crop handling and seed distribution.—There is an increase of $15,850 for the work of grain standardization, $8,350 of which is for the establishment of a new grain-standardization laboratory in Minnesota, and $7,500 for investigations relating to the handling, grading, and transportation of Kafir, milo, and other grain sorghums.

SEED-IMPORTATION LAW AMENDED.

There is an increase of $3,000 for the work of seed testing, and new authority has been given to the bureau, as follows:

"For carrying out the provisions of the act approved August twenty-fourth, nineteen hundred and twelve, entitled 'An act to regulate foreign commerce by prohibiting the admission into the United States of certain adulterated grain and seeds unfit for seeding purposes' (Thirty-seventh Statutes at Large, page five hundred and six), $31,700; and hereafter the provisions of said act approved August twenty-fourth, nineteen hundred and twelve, shall be applied to seed of vetch and rye grass; and hereafter when any kind or variety or mixture of the seeds subject to the provisions of said act of August twenty-fourth, nineteen hundred and twelve, as hereby amended, shall contain less than sixty-five per centum of live pure seed as distinguished from dead seed, chaff, dirt, other seeds, or foreign matter, such seeds or mixtures thereof shall be deemed unfit for seeding purposes within the meaning of said act approved August twenty-fourth, nineteen hundred and twelve, and the importation of such seed or mixture thereof is prohibited: *Provided, however*, That seed of Kentucky

blue grass and seed of Canada blue grass shall not be considered unfit for seeding purposes when they contain fifty per centum or more of live pure seed."

In the past the Federal authorities were able to exclude importations of foreign seed only when they contained weed seeds in excess of a certain quantity. They could not exclude seed simply because it contained quantities of dead seed or excessive amounts of chaff, dirt, or foreign matter. Under the new provision the Federal authorities can exclude a shipment of any of the seeds named in the act if it contains a high percentage of dead seed or trash.

In the items indicated above there are shown only the increases. The usual amounts have been allowed for experiments with plant breeding; experiments for the introduction of new crops; soil bacteriology work in inoculating legumes; biophysical investigations; studying and testing commercial seeds; investigations and improvement of cereals; breeding and physiology of crop plants; study of alkali-resistant and drought-resistant plants; investigation and improvement of methods of crop production under subhumid, semiarid, and dry-land conditions; investigations in connection with irrigation agriculture; foreign seed and plant introduction; purchase, propagation, testing, and distribution of new and rare seeds; investigation and improvement of alfalfa, clover, and other forage crops; and the utilization of cacti and other dry-land plants.

There is also contained an item of $105,060 for the investigation and improvement of fruits, and the methods of fruit growing, harvesting, packing, storing, handling, and shipping, and for experimental shipments of fruits within the United States and to foreign countries.

An item of $56,080 for horticultural investigations includes the study of producing, handling, and shipping truck and related crops, as well as work in landscaping, vegetable growing, and floriculture.

Farm Management.

The bill increases the appropriation for the Office of Farm Management from $271,080 to $285,810, or $14,730. This increase will make possible the enlargement of the work now under way.

This office is engaged in conducting business-efficiency studies in farming. It is endeavoring to assist the farmer in determining what types of industries he shall select, under given conditions, to make up his farm organization; and, when he shall have made this selection, how best to combine the different enterprises so as to make up a farm unit, efficient both in facility of operation and in financial returns.

In conducting its investigations the Office of Farm Management considers the farm as a whole rather than by its component units, such as the different crops and live-stock enterprises. Its purpose is to bring together into a practical working plan the findings of the other branches of the department which are studying in more detail the various individual farm enterprises. It also makes exhaustive studies of the experience of representative farmers in order to make available to others the methods practiced by those who succeed.

Forest Service.

$3,000,000 FOR PURCHASE OF FOREST LAND.

There are comparatively few changes in the appropriation for the Forest Service. The amounts of previous years have been, generally speaking, reappropriated, making provision for continued administration, protection, and development of the national forests and for varied investigations relating to the practice of forestry and the utilization of forest products.

Provision is made for continuance of the purchase of eastern lands for national-forest purposes, through an appropriation of $3,000,000, $1,000,000 for the fiscal year 1917 and $2,000,000 for the fiscal year 1918. Of the original $11,000,000 appropriated by the Weeks law for similar purposes, only $8,000,000 could be spent, owing to the limitations of time on the use of first installments of the sum.

Fish and game preserves.—Another new provision authorizes the President to designate as fish and game refuges suitable portions of the lands purchased. This legislation should have particular bearing on the Pisgah National Forest, N. C. Prompt action is necessary there to preserve the remnants of game with which the forest was formerly stocked, and the State has consented to the establishment of game refuges by the Government. It is believed that the exercise of this authority will develop the fish and game resources not only of the lands owned by the Government but also of the neighboring regions, since the refuges will serve as breeding grounds and will eventually restock the adjacent country where the game and fish have been seriously depleted and in many cases almost exterminated. Game and fish conservation will add, it is expected, very materially to the attractiveness and value of the eastern forests.

Utilization of mineral resources.—The law opens the eastern forests to prospecting and to the development and utilization of mineral resources under regulations to be made by the Secretary of Agriculture. Unlike the western national forests, which were established by setting aside public lands of the United States, the lands acquired through purchase heretofore have not been open to mineral entry under the general mining laws. This provision for the development of whatever mineral resources the eastern forests possess is expected to increase the contributions of the eastern forests to the economic development and general welfare of the regions in which they are located.

Disposal of brush.—Another provision of the act of some importance authorizes the Secretary of Agriculture to receive and disburse funds which may be deposited by purchasers of timber on national forests to meet the cost of disposing of brush and débris on timber-sale areas. Purchasers of timber are required uniformly to clean up such areas in connection with their operations. A new clause in the law will make it possible, in the interest of efficiency, for the Government to do this work at the purchasers' expense. The sums required will be deposited by the operators in a United States depository, to be used for the disposal of the brush at safe and opportune times. Any surplus of deposits in excess of the actual cost, under the terms of the law, will be returned to the purchasers.

Aid to national forest roads.—In addition to the sums appropriated in the agricultural act for the support, maintenance, and development of the national forests, the Federal-aid road act, approved July 11, 1916, provides the sum of $10,000,000, or $1,000,000 annually for 10 years, for the construction and maintenance of roads and trails within or partly within the national forests. One of the objects in constructing these roads is to bring the resources of the regions into productive use and to assist the communities in improving means of communication to markets at a time when they themselves are unable to construct proper roads.

Bureau of Chemistry.

TO STUDY PRODUCTION OF DYES.

A new item of $50,000 for "investigations and experiments in the utilization for coloring purposes of raw material grown or produced in the United States" gives the Bureau of Chemistry authority to devote attention to the production of dyes in the United States. This item is of peculiar significance in view of the interruption in the imports of dyes used in the textile, leather, printing, and other industries, 80 per cent of which previously have been produced abroad, notwithstanding the fact that all the raw materials necessary to make the dyes are found here in abundance. This condition is due largely to the fact that manufacturing processes for securing a maximum yield from a given amount of raw material have never been worked out in the United States. Under this appropriation it will be the purpose of the Bureau of Chemistry to assist in the development of the most economical methods of manufacturing dyes. Laboratory investigations will be made to determine whether coloring substances can be made from agricultural and other products which heretofore have not been used for the purpose, and effective methods for obtain-

ing coloring substances from coal tar and other sources also will be worked out.

The methods devised will be tested on a commercial scale in a small technical plant equipped for the purpose. A number of coloring materials which are used in foods already have received considerable laboratory investigation in connection with the Food and Drugs Act.

The appropriation act continues the funds for enforcing the Food and Drugs Act, including the net-weight amendment and the Sherley Amendment regarding false and fraudulent claims on patent medicines. Forty thousand dollars is appropriated for investigating the marketing, handling, packing, freezing, drying, storing, transportation, and preservation of poultry and eggs within the United States. This work is to be done in cooperation with the Office of Markets and Rural Organization and the Bureau of Animal Industry. There is also an appropriation of $14,000 for similar work with fish, including the utilization of waste products, and an appropriation of $5,000 for work with oysters and shell-fish. The sum of $8,080 is appropriated for the study of improved methods of utilizing by-products of citrus fruits; $10,000 is allowed for the care, weighing, handling, and transportation of naval stores; and $7,500 is set aside for the purchase and equipment of a traveling laboratory which will enable the department to make investigations of perishable substances which can not readily be shipped to distant laboratories for examination.

Bureau of Soils.

TO MAKE POTASH FROM KELP.

The appropriations for the Bureau of Soils include an item of $175,000 for the purpose of investigating and demonstrating within the United States the best method of obtaining potash on a commercial scale. An experimental and demonstration plant for the extraction of potash salts from kelp will be erected and operated somewhere on the Pacific coast, where kelp may be harvested two or three times each year. The different processes of extracting potash from kelp or of manufacturing kelp as a fertilizer will be developed for the purpose of discovering the most efficient methods of utilizing this resource.

The usual appropriation of $35,600 also is made for investigations and demonstrations within the United States to determine possible sources of potash, nitrates, and other natural fertilizers. In these investigations are included studies of the utilization of wastes from cities, the development of nitrogen from the air, and the uses of by-products of coke and other industries.

The appropriations for chemical investigations of soils and for the making of soil surveys in cooperation with other branches of the Government and the State institutions and the publication of maps and reports are continued. The sum of $18,100 is specifically appropriated for examination and classification, in cooperation with the Forest Service, of lands in the national forests.

Bureau of Entomology.

In addition to continuing the appropriations for carrying out the work of the Bureau of Entomology in investigating insects inimical to crops, animals, property, and the health of human beings, as well as beneficial insects, there is allowed an increase of $38,980. This increase will be used largely in developing several new lines of work, including particularly the following:

Investigation of biting flies, which have caused considerable losses of live stock in the West.

Extension work in bee culture in cooperation with the States Relations Service.

Investigation of tobacco insects.

Study of the grapeberry moth in the Great Lakes region and a special investigation of clover and alfalfa insects in the Northwest.

Provision also is made for a special investigation of the insects which transmit diseases of cucumber plants. This work will be done in cooperation with the Bureau of Plant Industry and certain State institutions.

The usual appropriations include amounts for investigations of the Hessian fly and the chinch bug, of insects affecting deciduous fruits, orchards, nuts, truck crops, flowers, trees, and of those having an influence on cotton, tobacco, rice, sugar cane, and other crops. Special separate appropriations are made for investigating insects affecting tropical and subtropical fruits, including the orange, lemon, grapefruit, and mango, and for investigating Mediterranean and other fruit flies. An item of $305,050 for combating the gipsy and brown-tail moths in New England is continued.

Bureau of Biological Survey.

In the Bureau of Biological Survey the appropriations for the maintenance of game and bird reservations and for destroying wolves, coyotes, and other predatory animals have been increased. During 1917, $25,000, an increase of $4,000, will be available for the maintenance of the reservations in charge of this office. This increase will enable the department to install warden service on the Sullys Hill Game Preserve, North Dakota, the Big Lake Bird Reservation in Arkansas, and on one or two other reservations not yet provided with wardens.

Congress has appropriated $400,540 for investigating the food habits of birds and mammals in relation to agriculture, for investigations connected with the rearing of fur-bearing animals, for the destruction of predatory animals on the national forests and on public lands, and for destroying wolves and coyotes in the rabies-infected area in the West. The new appropriation provides that $250,000 shall be expended for the destruction of predatory animals. Half of this sum will be devoted to work on national forests and the public domain and the other half to the extermination of animals affected with rabies. The campaign to destroy coyotes infected with rabies, which was inaugurated last winter, will proceed without interruption.

For carrying out the provisions of the migratory-bird law the act appropriates $50,000.

Bureau of Crop Estimates.

IMPROVEMENT IN CROP REPORTING.

An increase of $32,956 in the appropriation for the Bureau of Crop Estimates will be utilized largely in providing the following additions to the field force of that bureau: One assistant field agent for California; one assistant field agent for Texas; one field agent for Arizona (or New Mexico); two field agents who will investigate acreages, conditions, and yields of truck crops; and three fruit-crop specialists.

The three new State field agents will enable the bureau to cover more satisfactorily the important agricultural sections in the immense areas of the States of California, Texas, Arizona, and New Mexico. Texas leads in the production of cotton and live stock and California in the production of citrus fruits. Both States are also important producers of special crops, while the States of New Mexico and Arizona are in a developmental stage and rapidly increasing in agricultural importance.

The services of the two truck-crop specialists will permit the issuance of dependable reports concerning the important commercial truck crops in the principal regions devoted to their production. The fruit-crop specialists will, by field studies of the number of trees, the condition, production, quality, etc., of apples and peaches, make possible a further development and improvement of the bureau's estimates regarding the commercial crops of apples and peaches.

The act also grants necessary appropriations to this bureau for continuing its work of collecting, compiling, abstracting, summarizing, and interpreting data relating to agriculture and the making and publishing periodically of crop and live-stock estimates, including acreage, yield, and value of farm products.

States Relations Service.

The total appropriations for the States Relations Service are $2,969,680, as compared with $2,821,840 for the previous year. The principal item of increase is one of $100,000 for the farmers' cooperative demonstration work outside the cotton belt. This increase will permit of considerable further expansion of that work and of initiating

in a small way extension work by women county agents. There is also an increase of $23,000 for the experiment stations in Alaska, Hawaii, and Porto Rico. The appropriation for the Alaska Experiment Station is increased from $40,000 to $48,000, that of Hawaii from $35,000 to $40,000, and that of Porto Rico from $30,000 to $40,000, the appropriation for the Guam station remaining the same as for the previous year, viz, $15,000. These stations are under the direct jurisdiction of the Service. The remaining additional funds are provided for administrative and general expenses of the Service.

The usual funds are provided for the State experiment stations under the Hatch and Adams Acts. The appropriations for the farmers' cooperative demonstration work in the cotton belt, the study of farmers' institutes and agricultural schools, and investigations in home economics are continued as for the previous year.

The appropriations referred to above do not include $1,580,000 of Federal funds appropriated to the States under the cooperative agricultural extension act for extension work in agriculture and home economics. Moreover, it does not take into consideration the $1,100,000 which the States themselves must provide for similar work to secure the total sum available under the act.

In addition to the Federal and State funds for cooperative extension work named above, it is estimated that about $2,000,000 of State, county, college, and other funds derived from sources within the States will be used in this work during the current fiscal year.

Appropriations in detail.

Statutory salaries	$127,540	
General administration	16,280	
Supervision of Federal funds granted to experiment stations under Hatch and Adams Acts and to extension divisions of agricultural colleges under Smith-Lever Act	58,500	
Maintenance of stations in Alaska, Hawaii, Porto Rico, and Guam	143,000	
Farmers' institutes and agricultural schools	20,600	
Home economics investigations	24,220	
Farmers' demonstration work in North and West	478,240	
Farmers' demonstration work in South	661,300	
Total for expenses of States Relations Service		$1,529,680
State experiment stations:		
Hatch Act ($15,000 to each State)	720,000	
Adams Act ($15,000 to each State)	720,000	
Total for experiment stations		1,440,000
Agricultural extension work:		
Smith-Lever Act ($10,000 to each State)	480,000	
Smith-Lever Act, additional Federal fund	1,100,000	
Smith-Lever Act, additional State fund	[1] 1,100,000	
Total for extension work		2,680,000
Total under supervision of States Relations Service		5,649,680

[1] Must be provided by the States to secure the additional Federal fund.

Office of Public Roads and Rural Engineering.

The act contains an appropriation of $599,200 for carrying on the work of the Office of Public Roads and Rural Engineering. Of this sum, $142,780 is to be devoted to investigation of the best methods of road making, especially for ordinary sand, clay, and dirt roads, and the best kinds of road-making materials, and to furnishing expert advice on road building and maintenance. The sum of $37,780 is to be devoted to investigations of the chemical and physical character of road materials and $60,000 to field experiments with and investigations into various methods of road construction and maintenance and various road materials and preparations. Especial attention will be given during the year to studies of the distribution of pressures through fills and foundations of various types. A special building has been constructed, with equipment for measuring, through fills to a depth of 10 feet, the distribution of pressure applied at the top of the fill, and also due to the fill itself. Extensive field tests also will be made. Information of this character has long been desired by engineers, but little data of value have been obtainable on the subject, largely because until recently no apparatus has been designed which successfully could measure such pressures. Special attention will be given during the coming year to the study of the effect of manufacturing processes on the various types of road oils, refined tars, asphalts, and asphalt cements. A complete experimental plant already has been constructed for carrying out these experiments.

For the investigation of systems of road management and for giving expert advice on this subject, $39,540 has been allowed. This includes an increase of $5,000, which will be used largely in sending investigators to study the subject in the field and also in preparing exhibits of road models.

To continue the studies of the utilization of water for farm irrigation and investigation of appliances, ditches, and pipes and other conduits used in the construction, the sum of $103,400 was allowed. For investigating and reporting upon farm drainage and upon the drainage of swamp and other wet lands, the act allows $94,720. To continue the work of investigating farm and domestic water supply and drainage and the construction of farmhouses and other farm buildings, and for other rural engineering problems, the act appropriates $20,000.

Office of Markets and Rural Organization.

MARKET NEWS SERVICE AND STATE COOPERATION.

The rapid growth of the Office of Markets and Rural Organization is indicated by the fact that the appropriation for the current fiscal year is $872,590, an increase of $388,540. Of the total fund, $285,000 is appropriated for acquiring and diffusing information on subjects connected with the marketing and distributing of farm and nonmanufactured food products and the purchasing of farm supplies independently and in cooperation with other branches of the department, State agents, purchasing and consuming organizations, and persons engaged in the transportation, marketing, and distributing of farm and food products. The sum of $32,860 is appropriated for studies of cooperation among farmers of the United States in matters of rural credits and other forms of cooperation in rural communities. Part of this amount will be employed in diffusing among the people useful information growing out of these studies. The object is to provide a basis for broader utilization of results secured from the research, experimental, and demonstration work of the department, the agricultural colleges, and the State experiment stations. For the enforcement of the cotton-futures act $120,750 is appropriated, and $48,000 is set aside for demonstrating and promoting the use of standards for cotton, for investigating the ginning, grading, stapling, baling, marking, compressing, and tare of cotton, and for testing the waste, tensile strength, and bleaching qualities of different cottons to determine their spinning value.

The appropriation for the Office of Markets does not include the $250,000 made available for carrying out the provisions of the United States grain-standards act, nor the $50,000 for carrying into effect the provisions of the recently passed United States warehouse act.

Following is a description of the new projects of the Office of Markets and Rural Organization made possible by the increase in the agricultural appropriation act:

Market information on live stock and meats.—Under the section for the Office of Markets and Rural Organization, a new item provides a fund of $65,000 to be used in furnishing to interested persons market news on live stock, meats, and animal products so as to guide producers, consumers, and distributors in the marketing and distribution of such commodities.

The department constantly receives requests for information as to the numbers of animals available for grazing and feeding purposes and for slaughtering, but hitherto has been unable, owing to lack of funds, to collect and disseminate timely information of this kind at sufficiently short intervals to serve the desired purpose. There also are specific phases of market information which are needed by stockmen as a guide in timing their shipments of animals to market.

Plans for the development of a news service of this kind have been under consideration for some time. The principal feeding districts and grazing areas to and from which live-stock movements are rea-

sonably regular and well defined will be determined, and it is expected that arrangements will be made for regular and systematic reports relative to the numbers and movements of marketable live stock in such districts. In connection with investigations of the marketing of live stock, meats, and animal by-products, some progress already has been made in the delineation of the principal live-stock producing districts.

The Office of Markets and Rural Organization also has begun the compilation of monthly reports from a large number of centralized stockyards in the United States, with special reference to receipts and shipments, with a view to publishing the data in a way which will be of recognized value to stockmen and the trade in general. The additional funds provided by the new item will enable the office to supplement these reports with information regarding the market prices of live stock and the corresponding wholesale market prices of dressed meat. Regular reports of meats in cold storage similar to those now rendered on apples probably will be issued also.

Cooperation with States in marketing work.—Another new item appropriates $35,000 "to enable the Secretary of Agriculture to cooperate with the several States in the employment of agents to acquire and diffuse useful information connected with the distribution and marketing of farm products through investigational, demonstrational, or extension methods." This work will be carried on in cooperation with certain States which appropriate money for marketing purposes. The agents will maintain headquarters in the various States concerned, and their salaries and expenses will be borne jointly by the Federal Government and the States. They will cooperate with various branches of the agricultural colleges and experiment stations, with State directors of extension, with county agents, and with others, in the collection of data, the distribution of information, the demonstration of methods, and the development of cooperative and other marketing activities.

It is expected that this service will function as a clearing house among the States and between them and the Federal Department of Agriculture for all general and specific information in regard to the marketing of farm products. Through it various State organizations can be utilized in the investigation of local problems, and the results of the work of the Office of Markets and Rural Organization can be made available to the best advantage.

Market news on fruits and vegetables.—A third new item in the bill calls for $136,000 "for collecting and distributing by telegraph, mail, and otherwise, timely information on the supply, commercial movement, disposition, and market prices of fruits and vegetables." An experimental market news service on strawberries, tomatoes, peaches, and cantaloupes was inaugurated during the crop season of 1915 for the purpose of determining the cost and practicability of a nation-wide service, and this experimental work served as the basis for estimates for the 1917 work.

The market news service was undertaken for the purpose of securing and distributing dependable information on daily shipments, crop movement from producing territory, and current market prices and conditions, so that economical, intelligent, and satisfactory distribution might result. Reports on several of the more important fruit and vegetable crops are now being made by telegraph, and it is expected that the same service will be extended to such other crops as the funds may permit. The information obtained so far has been valuable in helping to establish fair f. o. b. prices at shipping points; in so guiding consignors that many unnecessary gluts have been avoided; in enabling shippers to gauge the probable accuracy of returns received, by showing the relative values of offerings from competitive areas; and in furnishing a fair basis for the adjustment of damage claims.

Representatives have been located in most of the larger metropolitan markets and in several important producing areas during crop movement.

Cooperative arrangements have been made with railroads whereby their officials all over the country report car-lot shipments of the crops covered by the service. These reports by railroad officials are filed as night messages and are received in Washington early in the morning. They state the number of cars shipped during the previous 24 hours, origin of shipment, and original destinations.

Representatives stationed in producing areas report f. o. b. prices. The employees in the city markets telegraph the receipts, prevailing wholesale prices, and market conditions on their respective markets.

At the Washington office this information is tabulated, and daily mail reports are issued to those who have need of this service. Any of this information may also be secured upon request by telegraph, collect. There is no charge whatever for the information.

Representatives at the branch offices do not undertake the sale of any products whatever, nor do they act as intermediaries between distributors and shippers. They are authorized, however, to furnish producers with lists of distributors and to answer inquiries in regard to prices and market conditions. Branch offices are now located in Boston, Buffalo, Chicago, Kansas City, Minneapolis, New York City, Philadelphia, Pittsburgh, and St. Louis. Other cities will be added as the work expands.

The whole-hearted cooperation of the officials of every important railroad handling fruits and vegetables in the country has contributed largely to the success of the work.

Enforcement of the Insecticide Act.

For the enforcement of the insecticide act, designed to prevent interstate shipment or importation and the manufacture or sale in the District of Columbia and the Territories of adulterated or misbranded insecticides and fungicides, there is appropriated $105,000, an increase of $5,000. This increase was allowed primarily for investigating disinfectants and germicides.

Federal Horticultural Board.

The Federal Horticultural Board receives an appropriation of $75,000 to enable it to carry out the provisions of the plant-quarantine act.

VALUES OF FARM WORK HORSES.

Estimates obtained by the department from about 150 owners indicate that a farm work horse is considered to be in his prime shortly after 6 years of age, and that even though still perfectly sound, he has declined in value about one-half from the maximum when between 14 and 15 years. The estimates were made on the basis of a maximum value of $250, and covered values by yearly steps from birth to 16 years of age. The accompanying table, showing the rise and fall of value with age in dollars and in percentage of maximum value, summarizes the results of this study.

Influence of age on values of farm work horses.

[Average of 147 estimates.]

Age.	Maximum value, $250.	Per cent of maximum value.
Birth	$39	16
6 months	63	25
1 year	96	38
2 years	142	57
3 years	185	74
4 years	220	88
5 years	242	97
6 years	248	99
Maximum	250	100
7 years	247	99
8 years	241	96
9 years	227	91
10 years	209	84
11 years	190	76
12 years	174	70
13 years	154	62
14 years	137	55
15 years	119	48
16 years	101	40

NEW FARMERS' BULLETINS.

Corn Culture in the Southeastern States (F. B. 729).

Ginseng Diseases and Their Control (F. B. 736).

House Ants: Kinds and Methods of Control (F. B. 740).

The Alfalfa Weevil and Methods of Controlling it (F. B. 741).

The Feeding of Dairy Cows (F. B. 743).

The Farmer's Income (F. B. 746).

A Simple Steam Sterilizer for Farm Dairy Utensils (F. B. 748).

NATIONAL FOREST ROADS

$1,000,000 of Federal Funds Available This Year Under Federal-Aid Road Act.

The Secretary of Agriculture has announced the plan to be pursued in spending the $10,000,000 appropriated by the Federal-aid road act for the construction and maintenance of roads and trails within or partly within national forests, and tentatively has allotted among the various national forest States the $1,000,000 which is expendable this fiscal year.

The tentative allotments to the principal national forest States are as follows: Alaska, $46,280; Arizona, $59,795; Arkansas, $11,294; California, $140,763; Colorado, $62,335; Idaho, $108,010; Montana, $69,901; Nevada, $19,195; New Mexico, $42,622; Oregon, $127,794; South Dakota, $8,115; Utah, $40,982; Washington, $91,739; Wyoming, $40,566. In addition, a total lump sum of $9,552 has been tentatively assigned to the group of States—Florida, Michigan, Minnesota, Nebraska, North Dakota, and Oklahoma—while the group of Eastern States—Maine, New Hampshire, Virginia, West Virginia, North Carolina, South Carolina, Tennessee, and Georgia—in which the Government is purchasing lands for national forests, has been allotted a lump sum of $21,057.

In general, the States and counties will be required to furnish cooperation in an amount at least equal to 50 per cent of the estimated cost of the surveys and construction. However, upon a satisfactory showing by the applicant State or county that such proportion of cooperation is inequitable, it may be altered and the ratio of cooperation fixed upon a basis equitable to both the State or county and the United States.

The method followed in apportioning the money is explained as follows: Ten per cent of the amount available each year will be withheld as a contingent fund. One-half of the remainder will be allotted to the States in amounts which will be based on the area of national forest lands in each State. The other half will be apportioned on a basis of estimated value of timber and forage resources which the forests contain. Amounts apportioned but unexpended within three years and any balance of the contingent fund which remains unapportioned at the end of each year will be reapportioned on the same basis as the original allotments.

The two groups of States to which lump sums are allotted are, it was explained, to be considered as single units of apportionment. Apportionments now to be made are for the current fiscal year only. Thereafter new apportionments will be made, giving consideration to the number and character of applications made by the State and county officials for expenditures on specific projects. These applications must be filed with the district foresters in the seven national-forest districts on or before January 1 of each year, for the fiscal year beginning the following July 1.

The determination of the projects upon which funds will be expended during the current fiscal year will be made on the basis of applications which must be filed with the district foresters on or before October 1, 1916. Each application must contain a statement of the public needs to be served by the proposed road and the manner and extent to which it would aid in the development of resources upon which communities within or adjacent to the national forests are dependent, and must also show the general location of the proposed road and its estimated cost. As already stated, in general States and counties must be prepared to furnish cooperation equal to at least 50 per cent of the estimated cost of surveys and construction. This cooperation may be in the form of money, labor, and materials, or the construction of roads. Where other factors are equal, the approval of a project may be determined upon the relative amount of cooperation offered. Many applications have, it is stated, already been received for expenditures upon specific projects.

HOW TO CUT ROSES.

There is a right and a wrong way to cut roses. The choice of the latter may seriously injure the blossom-producing properties of the plants, it is pointed out by specialists of the United States Department of Agriculture. This applies particularly, of course, to rose plants chosen and grown especially for cut-flower production. Such roses will be largely of the perpetual blooming sorts.

When a rose is cut from such plants—tea roses or other perpetual bloomers—only two or three eyes of the current season's growth of that branch should be left on the plant. This should give the roses very long stems. Succeeding blossoms should be cut close to the ground. It will seem like destroying the bush to take so much off it, but if the object is the production of roses, the cutting away of the surplus wood will attain the desired end.

If the spring pruning has not been sufficiently severe the plant is likely to have long, naked stalks and short stems to the flowers. With this character of growth only one or two strong leaf buds should be left on the branch when the flower is cut, so as to stimulate as much growth as possible from the base of the plant.

The greatest temptation to leave wood is where there are two or more buds on one branch, some being small when the terminal one is open. This temptation to follow a bad practice can be avoided by pinching off all side shoots after a bud has formed on the end of a branch. This prevents the formation of two or more buds on one stalk. This summer pruning will encourage additional blooms on varieties which bloom more than once a year.

VIOLATIONS OF LAWS.

Fines and other penalties were imposed in prosecutions for violations of regulatory laws as reported to the Bureau of Animal Industry during the month of July, 1916, as follows:

Meat-Inspection Law.

George A. Hammond, Bristol, Wis., $10.
Archibald Darrah, Hartsville, Pa., $75.
Nagle Packing Co., Jersey City, N. J., $25.

Twenty-eight Hour Law.

Wabash Railroad Co. (2 cases), $200 and costs.
St. Louis Merchants Bridge Terminal Railway Co. (4 cases), $400 and costs.
Chicago, St. Paul, Minneapolis & Omaha Railway Co., $100 and costs.
Baltimore & Ohio Railroad Co. (2 cases), $100 and costs.
Kansas City Southern Railway Co. (2 cases), $100 and $24.82 costs.
Chicago, Rock Island & Pacific Railway Co. (14 cases), $1,900 and $17.95 costs.
Great Northern Railway Co., $100 and costs.
Chicago, Milwaukee & St. Paul Railway Co. (5 cases), $500 and costs.
Southern Railway Co. (2 cases), $200 and costs.
St. Louis Southwestern Railway Co., $100 and $76.35 costs.
Texas & Pacific Railway Co., $100 and $7.90 costs.
Pennsylvania Railroad Co. (2 cases), $200 and costs.
Chicago & North Western Railway Co. (29 cases), $3,200.
Chicago, Burlington & Quincy Railroad Co. (42 cases) $5,150.
Chicago, Indianapolis & Louisville Railway Co. (3 cases), $450.
Receivers of Pere Marquette Railroad Co. (2 cases) $350.
Chicago Great Western Railway Co., $100.
Receivers of St. Louis & San Francisco Railroad Co., $100 and $17.90 costs.
Atchison, Topeka & Santa Fe Railway Co. (2 cases), $200 and $38.15 costs.

Quarantine Law.

St. Louis, Iron Mountain & Southern Railway Co., interstate movement of animals in violation of the Texas-fever quarantine regulations, $100 and costs.
Missouri, Kansas & Texas Railway Co. (3 cases) interstate movement of animals in violation of the Texas-fever quarantine regulations, $500 and $60.60 costs.
Kansas City Southern Railway Co., interstate movement of animals in violation of the Texas-fever quarantine regulations, $100 and $19.65 costs.
Southern Railway Co. (2 cases), interstate movement of animals in violation of the Texas-fever quarantine regulations, $200 and $16.35 costs.
Illinois Central Railroad Co. (3 cases), interstate movement of animals in violation of the Texas-fever quarantine regulations, $300 and costs.
Georgia Southern & Florida Railway Co. (2 cases), interstate movement of animals in violation of the Texas-fever quarantine regulations, $200.
Chicago, Rock Island & Pacific Railway Co., interstate movement of animals in violation of the Texas-fever quarantine regulations, $100 and $19.60 costs.
J. H. Hicks, interstate movement of animals in violation of the Texas-fever quarantine regulations, $100.

Miscellaneous.

E. C. Andrews, assault on inspector engaged in tick-eradication work, $100.
New York Butchers Calf Skin Association, interstate shipment of hides in violation of foot-and-mouth quarantine regulations, $25.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., SEPTEMBER 13, 1916. No. 6

STANDARD BASKET LAW.

Fixes Standards for Containers for Fruits, Berries, and Vegetables in Interstate Commerce.

Standards for Climax baskets for grapes, other fruits, and vegetables, and other types of baskets and containers used for small fruits, berries, and vegetables in interstate commerce, are fixed by an act approved by the President August 31, 1916. The law will become effective November 1, 1917.

The effect of the act will be to require the use of the standards in manufacturing, sale, or shipment for all interstate commerce, whether the containers are filled or unfilled. A large part of the traffic in fruits and vegetables in this country enters interstate commerce. The law relates only to the containers and will not affect local regulations in regard to heaped measure or other method of filling. A special exemption from the operations of the law is made for all containers manufactured, sold, or shipped, when intended for export to foreign countries, and when such containers accord with the specifications of the foreign purchasers, or comply with the laws of the country to which the shipment is destined.

Standards of three capacities are fixed for Climax baskets—2, 4, and 12 quarts, dry measure. These containers, often known as "grape baskets," have relatively narrow, flat bottoms, rounded at each end, and thin sides flaring slightly from the perpendicular. The handle is hooped over at the middle from side to side. In addition to fixing the capacities of these standard baskets of this type, the law also prescribes their dimensions.

The other standards are for "baskets or other containers for small fruits, berries, and vegetables." They are to have capacities only of one-half pint, 1 pint, 1 quart, or multiples of 1 quart, dry measure. Such containers may be of any shape so long as their capacities accurately accord with the standard requirements.

The examination and test of containers to determine whether they comply with the provisions of the act are made duties of the department, and the Secretary of Agriculture is empowered to establish and promulgate rules and regulations allowing such reasonable tolerances and variations as may be found necessary.

Penalties are provided by the act for the manufacture for shipment, sale for shipment, or shipment in interstate commerce of Climax baskets, and containers for small fruits, berries, and vegetables not in accord with the standards. It is provided, however:

That no dealer shall be prosecuted under the provisions of this act when he can establish a guaranty signed by the manufacturer, wholesaler, jobber, or other party residing within the United States from whom such Climax baskets, baskets, or other containers, as defined in this act, were purchased, to the effect that said Climax baskets, baskets, or other containers are correct within the meaning of this act. Said guaranty, to afford protection, shall contain the name and address of the party or parties making the sale of Climax baskets, baskets, or other containers, to such dealer, and in such case said party or parties shall be amenable to the prosecutions, fines, and other penalties which would attach in due course to the dealer under the provisions of this act.

FREED FROM CATTLE TICK.

Quarantine Lifted from 9,493 Square Miles in Six States—California Wholly Free.

Approximately 9,493 square miles of territory in six States is released from quarantine on account of the Texas-fever cattle tick by an order signed by the Secretary of Agriculture to become effective September 15, 1916. The order releases the last area under quarantine in California, adding this State to the tick-free list. The other territory released consists of 10 counties in Georgia, 3 in South Carolina, 2 in Alabama, 2 whole counties and 2 fractional parts of counties in Oklahoma, and a portion of 1 county in Mississippi.

Greater interest in tick eradication is being taken throughout the South than at any time since the beginning of the work cooperatively by the United States Department of Agriculture and the States in 1906.

The territory released is, in detail, as follows:

In Alabama, the counties of Autauga and Greene.

In California, the remainder of San Diego County, making the entire State now free from quarantine.

In Georgia, the counties of Barrow, Bartow, Campbell, Columbia, Fayette, Floyd, Henry, Jackson, Paulding, and Walton.

In Mississippi, the remainder of Yazoo County.

In Oklahoma, the entire counties of Wagoner and Stephens and portions of Muskogee and Tulsa Counties.

In South Carolina, the counties of Bamberg, Barnwell, and Edgefield.

STANDARDS FOR CORN.

Secretary of Agriculture Establishes U. S. Standards for Shelled Corn, Effective December 1, 1916.

The official grain standards of the United States for shelled corn, to become effective on and after December 1, 1916, were fixed and established September 1, 1916, by the Secretary of Agriculture under the authority contained in the United States grain standards act, which became a law August 11, 1916. The use of these standards after they become effective is required for shelled corn shipped from any point in the United States in interstate or foreign commerce and sold, offered for sale, or consigned for sale by grade. The act, however, permits the interstate or foreign shipment of grain sold by sample or type under any description which is not false or misleading and does not include any of the terms of the official grain standards.

The standards for shelled corn promulgated to-day are, with the exception of slight changes, substantially the same as the permissive standards for such grain promulgated by the Acting Secretary of Agriculture January 3, 1914, to take effect on July 1, 1914. These standards already had been accepted voluntarily by many of the leading grain exchanges.

The only important changes from the old standards are the addition of a test weight to grades No. 1 and No. 2 for all colors of corn and the substitution of one testing screen with round holes fourteen sixty-fourths of an inch in diameter for the two screens, one nine sixty-fourths and the other sixteen sixty-fourths, as required in the old standards.

The full text of the notice of the establishing of the grades follows.

Order Establishing Official Grain Standards of the United States for Shelled Corn.

Pursuant to the authority vested in the Secretary of Agriculture by Part B, known as the United States grain standards act, of an act of Congress entitled "An act making appropriations for the Department of Agriculture for the fiscal year ending June thirtieth, nineteen hundred and seventeen, and for other purposes," approved August 11, 1916 (Public No. 190), I, David F. Houston, Secretary of Agriculture, do hereby fix and establish standards of quality and condition

for shelled corn (maize) as hereinafter described, which shall become effective on the 1st day of December, 1916:

GRADES FOR WHITE CORN.

Number one, white.—Shall be white corn; shall be sweet; shall contain not more than fourteen per centum of moisture, not more than two per centum of foreign material and cracked corn, and not more than two per centum of damaged corn; shall not contain heat damaged and mahogany kernels; and shall weigh not less than fifty-five pounds per Winchester bushel.

Number two, white.—Shall be white corn which does not come within the requirements of grade Number one, white; shall be sweet; shall contain not more than fifteen and one-half per centum of moisture, not more than three per centum of foreign material and cracked corn, and not more than four per centum of damaged corn; shall not contain heat damaged and mahogany kernels; and shall weigh not less than fifty-three pounds per Winchester bushel.

Number three, white.—Shall be white corn which does not come within the requirements of grade Number one, white, and grade Number two, white; shall be sweet; shall contain not more than seventeen and one-half per centum of moisture, not more than four per centum of foreign material and cracked corn, and not more than six per centum of damaged corn; and shall not contain heat damaged and mahogany kernels.

Number four, white.—Shall be white corn which does not come within the requirements of grade Number one, white, grade Number two, white, and grade Number three, white; shall be sweet; shall contain not more than nineteen and one-half per centum of moisture, not more than five per centum of foreign material and cracked corn, and not more than eight per centum of damaged corn which may include not more than one-half of one per centum of heat damaged and mahogany kernels.

Number five, white.—Shall be white corn which does not come within the requirements of grade Number one, white, grade Number two, white, grade Number three, white, and grade Number four, white; shall be sweet; and shall contain not more than twenty-one and one-half per centum of moisture, not more than six per centum of foreign material and cracked corn, and not more than ten per centum of damaged corn which may include not more than one per centum of heat damaged and mahogany kernels.

Number six, white.—Shall be white corn which does not come within the requirements of grade Number one, white, grade Number two, white, grade Number three, white, grade Number four, white, and grade Number five, white; shall contain not more than twenty-three per centum of moisture, not more than seven per centum of foreign material and cracked corn, and not more than fifteen per centum of damaged corn which may include not more than three per centum of heat damaged and mahogany kernels; may be musty or sour; and may include corn that is immature and badly blistered.

GRADES FOR YELLOW CORN.

Number one, yellow.—Shall be yellow corn; shall be sweet; shall contain not more than fourteen per cent of moisture, not more than two per centum of foreign material and cracked corn, and not more than two per centum of damaged corn; shall not contain heat damaged and mahogany kernels; and shall weigh not less than fifty-five pounds per Winchester bushel.

Number two, yellow.—Shall be yellow corn which does not come within the requirements of grade Number one, yellow; shall be sweet; shall contain not more than fifteen and one-half per centum of moisture, not more than three per centum of foreign material and cracked corn, and not more than four per centum of damaged corn; shall not contain heat damaged and mahogany kernels; and shall weigh not less than fifty-three pounds per Winchester bushel.

Number three, yellow.—Shall be yellow corn which does not come within the requirements of grade Number one, yellow, and grade Number two, yellow; shall be sweet; shall contain not more than seventeen and one-half per centum of moisture, not more than four per centum of foreign material and cracked corn, and not more than six per centum of damaged corn; and shall not contain heat damaged and mahogany kernels.

Number four, yellow.—Shall be yellow corn which does not come within the requirements of grade Number one, yellow, grade Number two, yellow, and grade Number three, yellow; shall be sweet; shall contain not more than nineteen and one-half per centum of moisture, not more than five per centum of foreign material and cracked corn, and not more than eight per centum of damaged corn which may include not more than one-half of one per centum of heat damaged and mahogany kernels.

Number five, yellow.—Shall be yellow corn which does not come within the requirements of grade Number one, yellow, grade Number two, yellow, grade Number three, yellow, and grade Number four, yellow; shall be sweet; and shall contain not more than twenty-one and one-half per centum of moisture, not more than six per centum of foreign material and cracked corn, and not more than ten per centum of damaged corn which may include not more than one per centum of heat damaged and mahogany kernels.

Number six, yellow.—Shall be yellow corn which does not come within the requirements of grade Number one, yellow, grade Number two, yellow, grade Number three, yellow, grade Number four, yellow, and grade Number five, yellow; shall contain not more than twenty-three per centum of moisture, not more than seven per centum of foreign material and cracked corn, and not more than fifteen per centum of damaged corn which may include not more than three per centum of heat damaged and mahogany kernels; may be musty or sour; and may include corn that is immature and badly blistered.

GRADES FOR MIXED CORN.

Number one, mixed.—Shall be mixed corn; shall be sweet; shall contain not more than fourteen per centum of moisture, not more than two per centum of foreign material and cracked corn, and not more than two per centum of damaged corn; shall not contain heat damaged and mahogany kernels; and shall weigh not less than fifty-five pounds per Winchester bushel.

Number two, mixed.—Shall be mixed corn which does not come within the requirements of grade Number one, mixed; shall be sweet; shall contain not more than fifteen and one-half per centum of moisture, not more than three per centum of foreign material and cracked corn, and not more than four per centum of damaged corn; shall not contain heat damaged and mahogany kernels; and shall weigh not less than fifty-three pounds per Winchester bushel.

Number three, mixed.—Shall be mixed corn which does not come within the requirements of grade Number one, mixed, and grade Number two, mixed; shall be sweet; shall contain not more than seventeen and one-half per centum of moisture, not more than four per centum of foreign material and cracked corn, and not more than six per centum of damaged corn; and shall not contain heat damaged and mahogany kernels.

Number four, mixed.—Shall be mixed corn which does not come within the requirements of grade Number one, mixed, grade Number two, mixed, and grade Number three, mixed; shall be sweet; shall contain not more than nineteen and one-half per centum of moisture, not more than five per centum of foreign material and cracked corn, and not more than eight per centum of damaged corn which may include not more than one-half of one per centum of heat damaged and mahogany kernels.

Number five, mixed.—Shall be mixed corn which does not come within the requirements of grade Number one, mixed, grade Number two, mixed, grade Number three, mixed, and grade Number four, mixed; shall be sweet; and shall contain not more than twenty-one and one-half per centum of moisture, not more than six per centum of foreign material and cracked corn, and not more than ten per centum of damaged corn which may include not more than one per centum of heat damaged and mahogany kernels.

Number six, mixed.—Shall be mixed corn which does not come within the requirements of grade Number one, mixed, grade Number two, mixed, grade Number three, mixed, grade Number four, mixed, and grade Number five, mixed; shall contain not more than twenty-three per centum of moisture, not more than seven per centum of foreign material and cracked corn, and not more than fifteen per centum of damaged corn which may include not more than three per centum of heat damaged and mahogany kernels; may be musty or sour; and may include corn that is immature and badly blistered.

SAMPLE GRADE.

Shall be corn which does not come within the requirements of the grades for white corn, the grades for yellow corn, and the grades for mixed corn, including corn that is hot, fire burned, infested with live weevils, or otherwise of distinctly low quality.

DEFINITIONS OF TERMS HEREINBEFORE USED.

The following terms hereinbefore used shall be construed, respectively, to mean—

White corn.—Corn of which at least ninety-eight per centum by weight of the kernels are white. A slight tinge of light straw color or of pink on kernels of corn otherwise white shall not affect their classification as white corn.

Yellow corn.—Corn of which at least ninety-five per centum by weight of the kernels are yellow. A slight tinge of red on kernels of corn otherwise yellow shall not affect their classification as yellow corn.

Mixed corn.—Corn of various colors not coming within the limits for color as provided in the definitions of white corn and yellow corn. White capped yellow kernels shall be classified as mixed corn.

Foreign material and cracked corn.—Kernels and pieces of kernels of corn and all

(*Continued on last column, page 3.*)

WINTERING BEEF CATTLE.

Experiments Show Winter Grazing to Be Most Economical Method for Appalachian Region.

How to winter his beef cattle economically is often a serious problem with the farmer. The economy of wintering the stock often affects very seriously the profits to be made upon them. In order to determine what methods are more economical than others the department, in cooperation with State agricultural colleges, has been conducting experiments for several years, testing out common methods along with others which gave promise of being both satisfactory and economical. The summary of the experiments of 1915–16 in carrying beef cattle through the winter are given in the accompanying table:

Summary of experiments in wintering beef cattle in North Carolina and West Virginia.

	Wintering steers at Springdale, N. C. (119 days).				Wintering steers at Lewisburg, W. Va. (122 days).			Wintering beef cows at Lewisburg, W. Va. (121 days).		
	Lot 1.	Lot 2.	Lot 3.	Lot 4.	Lot 1.	Lot 2.	Lot 3.	Lot 1.	Lot 2.	Lot 3.
Number in lot	24	24	33	[1] 16	10	10	10	10	10	10
Average daily ration per head (on full feed):										
Ear corn ... pounds	3.15									
Corn stover, hay, and straw, pounds	11.4	6	6							
Cottonseed meal ... pounds						1			1.5	
Shock corn ... do										15
Corn silage ... do		18	18		20	25		20	25	
Mixed hay ... do					5		12	8		10
Wheat straw ... do					2.16	5	4.34	2.76	8	2.1
Average initial weight per head, pounds	813	805	770	762	678	678	678	865	870	867
Average final weight per head, pounds	779	764	730	788	678	758	671	779 [2] 86 [3] 25	835 [2] 35 [3] 46	818 [2] 49 [3] 11
Average total gain per head, pounds	−34	−41	−40	26	0	80	−7			
Average cost of feed per head during winter	$12.14	$7.00	$7.00	$5.30	$10.26	$10.07	$12.53	$13.58	$11.77	[4] $18.28

[1] Lot 4 grazed on 24 acres and were fed in bad weather.
[2] 6 cows in lot 1; 8 cows in lot 2, and 5 cows in lot 3 had calved previous to final weighing. Weights without calves.
[3] Weights with calves.
[4] $1.34 per head credit was allowed for pork produced by hogs following this lot.

In North Carolina, four lots of steers were used in the experiment, which lasted 199 days. The results of three years' experiments in North Carolina will be published at the end of the present year. The common method of wintering steers in western North Carolina is to give them a light ration of dry roughage, usually composed of corn stover, hay, and straw, supplemented with a little corn. Lot 1 of the experiment was fed in this manner to test the efficiency and economy of this practice. Lots 2 and 3 were fed a light ration of corn silage (18 pounds per head daily) and given in addition, 6 pounds each of dry roughage, without any grain at all, while the steers of lot 4 were grazed on a pasture of orchard grass, red top, blue grass, with a little alsike and red clover mixed in, and were fed a dry roughage when the snow was so deep that the steers could not get grass. The pasture was on the side of a mountain which had been planted to grass and allowed to grow up during the summer without grazing. The 16 head were grazed on 24 acres, or considerably less pasture than would have been necessary for summer grazing. Lot 1 lost 34 pounds per head, lots 2 and 3 lost 41 and 40 pounds, respectively, during the winter, while lot 4 actually gained 26 pounds per head on pasture.

Lot 1, which was wintered as most cattle are in western North Carolina, was wintered at a cost of $12.14 per head, which was more expensive than any of the other methods used. By using silage, the wintering was reduced in cost to $7 per head, while the steers of lot 4, which gained in weight, cost but $5.30 per head to winter. This method is the most satisfactory and economical method of wintering cattle which has been found for the Appalachian region, and it should be given wide publicity.

In West Virginia, 3 lots of yearling steers and 3 lots of cows were used in the wintering experiments. A popular method of wintering steers on farms where there are no silos is to feed them on mixed hay and straw or on hay and shock corn. Lot 3 in each group was fed in this manner.

On farms having silos the steers are usually fed on silage and dry roughage, being given little or no grain. Lot 1 was wintered in this way.

The steers of lot 2 were fed 25 pounds of silage, 5 pounds of straw, and were given in addition, 1 pound of cottonseed meal per head per day.

Lot 1 neither gained nor lost weight, lot 2 gained 80 pounds per head, while the steers of lot 3 lost 7 pounds each, and cost the most to winter. Again, the prevailing method of wintering the steers was the least economical. The steers wintered on silage and dry roughage (lot 1) cost $2.32 less to winter per head than the steers of lot 3, receiving hay and straw.

The use of cottonseed meal as a supplementary ration was most satisfactory. These steers were wintered cheapest, but still made the largest gains. Their gain in weight does not really show what a difference there was in the steers at the end of the winter. The cottonseed meal steers were in as good condition as when they entered the feed lot in the fall, and their coats were glossy, while those of the others were dead and lusterless.

Cottonseed meal should be far more generally used in wintering stockers, as it always proves profitable for this when fed in limited amounts.

The breeding cows of all three lots came through the winter in good flesh and all the calves born were thrifty. Again a combination of silage and cottonseed meal proved the most satisfactory and economical ration. It cost but $11.77 to winter each cow of this lot, as compared with $18.28 per head for the cows of lot 3, after a pork credit of $1.34 was deducted.

The cows fed on silage and cottonseed meal were by far in the best condition and were giving more milk for their calves than the cows of the other lots. Lot 3 stood second, and lot 1 third. The cost of wintering lot 3, however, was far greater than that for either of the other two lots, and was the least desirable way of wintering the cows. The farmers of West Virginia and neighboring States can save a great deal of money each year by studying these results closely and substituting a ration of silage and cottonseed meal for wintering the breeding herd and stocker steers, in place of the common ration made up of mixed hay and shock corn or ear corn.

W. F. Ward,
Senior Animal Husbandman,
Beef Cattle Investigations.

STANDARDS FOR CORN.

(*Continued from page 2.*)

matter, other than corn, which will pass through a metal sieve perforated with round holes fourteen sixty-fourths of an inch in diameter, and all foreign material remaining on the sieve after the sample of the corn involved has been screened.

Heat damaged and mahogany kernels.—Kernels of corn which have been discolored as a result of heating caused by fermentation or as a result of fire.

Per centum.—In case of foreign material and cracked corn, damaged corn, and heat damaged and mahogany kernels, is the percentage ascertained by weight.

Per centum of moisture.—The percentage of moisture contained in corn (maize), which shall be equivalent to that ascertained by the moisture tester and the method of use thereof described in Circular No. 72, and supplement thereto, issued by the United States Department of Agriculture, Bureau of Plant Industry, accompanying this order.

Witness my hand and the official seal of the Department of Agriculture this first day of September, 1916.

[SEAL.] D. F. Houston,
Secretary of Agriculture.

SCHOOL LUNCHES.

Plan Noonday Meals with Reference to General Essentials of Diet for Growing Child.

What shall school children be given to eat at noon in the lunch basket, at the home lunch table, or in the lunch room operated by the school authorities? To help answer this question, which almost every mother and many of the educational authorities are asking constantly, the department, through the Office of Home Economics, States Relations Service, has issued Farmers' Bulletin No. 712, School Lunches. This bulletin was prepared by Miss Caroline L. Hunt and Miss Mabel Ward. The bulletin, after discussing the general principles of feeding school children to provide for activity and develop them into sturdy manhood and womanhood, gives a number of simple and appetizing menus for the school lunch basket and bills of fare and recipes for preparing inexpensive and nourishing noonday meals or hot dishes for children, either at home, on a school stove, or in the domestic-science kitchen.

Relation of Lunch to Other Meals.

In feeding a child or anyone else, the authors of the bulletin point out, it is not wise to think of any one meal apart from the other two. It is seldom convenient to provide at one meal all the materials needed by a growing body, and those which are omitted from one meal should be supplied by one of the other meals. The noon meal for children, however, where food must be prepared at home in the morning to be eaten elsewhere at noon, or where the children must hurry home, eat quickly, and then rush back to school, offers special difficulties and deserves the careful attention of parents.

Dietary Essentials for the Growing Child.

Before it is possible to plan a rational basket or other luncheon for children, it is necessary for the mother to understand the general essentials of diet for young people. These essentials in general are an abundance of simple foods, carefully prepared, and of sufficient variety to provide energy, repair wastes, provide elements for building bone and tissue, and stimulate growth. To do this most effectively the three meals each day must supply the child with sufficient food from each of the following classes:

1. *Cereal or starchy foods.*—Cereals, eaten principally as bread, supply nearly half of the protein (commonly thought of as tissue-building material) and nearly two-thirds of the fuel or energy in the American diet. The quality of the bread, therefore, is extremely important. Its crust should be crisp and deep (indicating thorough baking), but not hard or burned. It should be light and free from any suggestion of sourness or rancidity. The crumb should be elastic, and yet capable of being easily broken up in the mouth without forming a sticky mass, or being too dry to taste good. These qualities can be secured in rolls and biscuit, as well as in ordinary bread, provided they are cooked thoroughly. The objection to hot bread is due to the fact that undercooking may leave it soggy on the inside, rather than because such breads are eaten hot. The child's appetite for bread may be stimulated by using different kinds of bread, zwieback, and crackers, by the addition of raisins, currants, or nut meats, and sometimes by cutting the slices into fancy shapes.

Cereal mushes and ready-to-eat breakfast foods supply nearly the same nutrients as bread, a half cupful of cooked cereal being about equivalent to a good-sized slice of bread. A tablespoonful of cream is about equivalent in fat to a liberal spreading of butter.

2. *Protein-rich foods.*—While bread and cereals come near to fulfilling one of the important requirements of diet—a correct proportion of nutrients providing fuel only and those useful for body building—other foods which provide protein in larger proportion as compared with fuel should not be neglected. These foods include milk, meat (except the very fattest), fish, poultry, eggs, cheese, dried beans, cowpeas, peas, peanuts, and almonds, walnuts, and other nuts. Nuts, of course, also contain considerable fat. Milk is an absolute essential, not only because it contains a large number of nourishing substances in forms easily assimilated, but also because, in some way not now fully understood, milk seems to promote growth and help the body of a child make good use of other foods. Milk is rich in most kinds of mineral matter, particularly lime, useful in the development of bone and tissue.

Milk should never be omitted wholly from the diet of a child. If not used at luncheon it should appear at other meals. For luncheon, however, it has been found that such dishes as milk toast, milk soups made with vegetables, fish or vegetable chowders, and cocoa are valuable foods, easily prepared at home or in the school, because they require no oven and call only for simple utensils. White sauces made of vegetable juices, milk, or broth differ from milk soup largely in that they contain more flour. When considering milk, the food value of skim milk, which contains a larger percentage of protein though less fat than full milk, should not be overlooked.

Eggs, the next of the protein foods commonly given to children, contain much iron and their yolks are rich in fat.

3. *Fatty foods.*—The fatty foods, such as butter, cream, salad oils, bacon, and similar foods, are important sources of energy and nourishment for the growing body. Fats are best given in such simple forms rather than in rich pastries or sweets.

4. *Fresh vegetables and fruits.*—Because ordinary vegetables, such as potatoes, greens, lettuce, green peas and beans, asparagus, and others, and the ordinary fruits do not contain much fat or protein, their value in the child's diet is frequently underestimated. These things, however, should be considered a necessary part of the diet of the child for the very important reason that they furnish mineral and other materials required to form bone and tissue as well as to repair waste and supply some energy. Green vegetables are valuable particularly because they contain iron in forms which the body can utilize. Fruits contain a considerable percentage of sugar, especially when they are dried, and sugar is a quickly absorbed fuel food. As things eaten raw transmit disease germs, care should be taken to wash vegetables and fruits thoroughly in several waters. Many fruits, especially those with skins, can be dipped safely into boiling water, while those with thick skins, such as oranges, bananas, and apples, may be safely washed even with soap. Dried fruits when washed and put into an oven to dry absorb some of the water, and thus are softened and improved in taste.

5. *Sweets and desserts.*—Sugar, as has been said, is a quickly absorbed fuel food and simple sweets have their place in the diet of all children. If not served between meals or at times when they destroy the appetite for other needed foods, there is no objection to them. They may be served in the form of cake not rich enough to be classed as pastry, cookies, sweet chocolate, simple candy, honey, dried or preserved fruits, maple sugar, and loaf sugar. In general, fruits, fresh, baked or stewed or raw, and simple sweets are much better desserts for children than rich pastry which contains a large amount of fat.

The following suggested menus for the school lunch basket give the child, as nearly as is practicable in such a meal, the proper proportions of the different classes of foods:

For the Basket Lunch.

(1) Sandwiches with sliced tender meat for filling, baked apples, cookies, or a few lumps of sugar.

(2) Slices of meat loaf or bean loaf, bread-and-butter sandwiches, stewed fruit, small frosted cake.

(3) Crisp rolls, hollowed out and filled with chopped meat or fish, moistened and seasoned, or mixed with salad dressing; orange, apple, a mixture of sliced fruits or berries, cake.

(4) Lettuce or celery sandwiches, cup custard, jelly sandwiches.

(5) Cottage cheese and chopped green-pepper sandwiches or a pot of cream cheese

(Continued on page 6.)

UNGINNED COTTON.

Practice of Marketing Cotton in the Seed an Unprofitable One for the Producer.

That the practice of selling cotton in the seed is responsible for serious losses to producers in many sections has been demonstrated by investigations by marketing specialists of the department. It is impossible, it is said, to determine accurately before ginning the quality of cotton and the percentages of lint, seed, and trash which it contains. In consequence, buyers of seed cotton base their prices on the average character of the cotton of the community, and the farmer who produces better cotton than the average often obtains no reward. As a matter of fact, even the producers of average cotton suffer, for the buyer allows himself a wide margin of safety in making his quotations and purchases.

These facts are brought out in a number of tables just published in Department Bulletin No. 375, Disadvantages of Selling Cotton in the Seed. This practice, while not as common as it once was, is still prevalent in certain sections, particularly in those regions in which cotton is a comparatively new crop or in which the production is comparatively scanty. For example, it is estimated that 90 per cent of Missouri's small crop was sold in the seed in 1915 and only 2 per cent of South Carolina's. The actual number of bales sold in this way, however, was greatest in Oklahoma, and for this reason the investigation, the results of which are to be found in the bulletin already mentioned, was conducted in that State.

In the course of this investigation a large number of samples of seed cotton were collected from loads sold by different farmers and the price of each load ascertained. These samples were ginned and the relative proportions of lint, seed, and trash determined. It was then possible to compare the returns which the farmers received for their cotton with what they would have obtained had they sold their lint and seed separately at the prevailing prices.

The samples showed a wide variation in the outturn of lint, seed, and trash. The variation, however, was rarely taken into account by the buyers who, in the same market, on the same day, often offered the same price for all unginned cotton, irrespective of its quality. Such discrimination as was exercised was against the producer—that is, a lower price might be offered for cotton that was obviously below the average, but good cotton brought no more than the market rate.

This rate was in the majority of cases much below what the seed and lint would have brought had they been sold separately. Comparisons published in detail in the new bulletin show that this loss ranged from an average of $1.75 per bale for low middling to an average of $7.60 per bale for good middling. The total loss on 586 bales of the white grades sampled by the investigators was $2,715.20, or an average of $4.63. In these calculations, it should be said, proper allowance was made for the cost of ginning. In some instances, it is true, the farmer gained by selling his cotton in the seed, but these were far too few to alter the general result.

There is, moreover, another disadvantage inherent in the practice. Not only does the farmer usually lose in the marketing of any one crop, but he is seriously hindered in improving his cotton from year to year because there is no incentive to do so. As the buyer of seed cotton pays little or no attention to grade and staple the producer is forced to think chiefly of the yield per acre. Moreover, it is difficult, if not impossible, for the grower to obtain his own seed from the ginner for planting, and he is, therefore, unable to maintain a pure variety. In the majority of markets about the only advantage in selling seed cotton, the investigators found, was the saving in the time of the men and teams that otherwise would have to await their turns at the gins. They recommend, therefore, that for the common good of all concerned the practice of selling cotton in the seed be discouraged, and that each bale be custom ginned and sold upon its merits.

REPAIRING LAWNS.

Renew Grass Plots in North Central and Middle Atlantic States in Early Fall.

The work of lawn repair, like that of making a new lawn, declare specialists of the department, is best performed in early September in the regions south of New England and north of the Potomac and Ohio Rivers. To improve an old lawn that has run down is often more difficult than to make a new one, but if reasonably good turf exists, it can be bettered materially by reseeding and fertilizing. If the lawn is patchy, the small areas should be scratched with a steel rake, dressed with loam or compost, and the seed sown on this. If large areas of the lawn have a thin covering of turf it will be advantageous to use a disk seeder. After seeding, a second dressing of loam or compost should be applied and the areas rolled lightly.

In New England and the other States of the northern tier similar procedure should be adopted in renewing the lawn, but the work should be done in spring. Care should be taken in watering and mowing all new plantings of lawn grass not to disturb the young plants.

Careful attention is necessary if an established lawn is to be kept in good condition. Most lawns need an occasional application of some good fertilizer regardless of the kind of soil on which they exist. Thoroughly rotted stable manure is excellent for this purpose. Another good dressing is a mixture of manure well composted with sod and leaf mold and sifted before using. It is desirable that the material be applied in such condition that there is nothing to rake off. Coarse humus or humus dressing should never be used, as the grass is almost invariably killed in small patches beneath the lumps. The humus dressings should be applied in the autumn or winter and again in the spring. Bone meal is one of the best commercial fertilizers for the lawn. When used it should be applied in the late winter or early spring at a rate of 10 to 15 pounds to the thousand square feet.

Even after a lawn is established on heavy clay, it is not too late to lighten the soil by sand applications. Sharp, clean sand free from silt is best and should be applied to a depth of one-eighth of an inch or more over the turf. It will work into the soil quickly and produce a lasting and beneficial effect.

Lawns are benefited by frequent clipping. During the rapid-growing season mowings twice a week are not too frequent. It usually makes little difference whether the clipped grass is removed or allowed to remain on the lawn. It is coming to be considered the best practice to remove it, however. It is neither necessary nor advisable to roll lawns during the summer.

Lawns should be well watered during dry periods and should be soaked thoroughly twice or three times a week rather than lightly sprinkled at more frequent intervals. Late afternoon or evening is the best time for watering on bright, hot days. Weeds are troublesome in all lawns throughout the growing season, but particularly so from the latter part of June until frost. Pulling or cutting these plant pests from the turf is the most satisfactory way of ridding a lawn of them. The control of trailing weeds and undesirable grasses can best be accomplished by raking prior to mowing, the intruders thus being raised so that the mower blades will clip them. The use of chemical sprays on lawn weeds has not given very satisfactory results. On the whole, the weed problem can best be solved by making the conditions as favorable as possible for the turf grasses and maintaining a strict watch at all times to remove troublesome weeds as they appear. A grass-seed mixture rich in red fescue will grow better in shady places probably than other mixtures. By thorough watering and the liberal use of fertilizers and lime, however, the evil effects of shade on the growth of all lawn grasses largely can be overcome in many cases.

PLEASURE AND PROFIT.

Genuine Satisfaction in Successful Management of a Profitable Dairy Business.

Most people are interested in getting as much enjoyment out of their work as possible, yet comparatively few can devote all their time to pleasure seeking without thought of financial return. Some wealthy men have constructed beautiful buildings and placed fine cattle on their country places simply for pleasure and with little hope of ultimate profit. As a companion picture, the dairy experts of the department have called attention recently to the genuine satisfaction that is felt by the truly successful dairyman whose well-bred, well-fed cows are sheltered by a well-built modern dairy barn of moderate price, and whose business pays a fair profit on every invested dollar.

As population increases, land advances in price, and dairying becomes more popular because the increased demand for milk, cream, cheese, butter, and ice cream enables the well-managed dairy farm to pay a profit, even on high-priced land. As in any other productive enterprise, successful dairying depends upon two great principles—economical production, and the successful marketing of the products.

Economical production of dairy products depends primarily upon the cow and upon intelligent feeding, care, and management. The unprofitable cow is a burden to the owner. One good cow often brings in more net profit than a dozen poor ones. The herd bull should be from a well-bred sire and a high-production dam, and only well-bred heifer calves should be raised on the modern dairy farm. If a bull of first-class breeding and good individuality costs too much, a number of neighbors may club together and buy a bull of better quality than any one of them alone could afford. In many localities bull associations have been formed to meet just such conditions. Dairying can never become highly profitable until the scrub bull is forever banished from our dairy farms. This includes the registered scrub.

If dairying is to provide either pleasure or profit, the unprofitable cow must be disposed of. The well-bred, high producer that takes her place must be properly and economically fed and cared for. Cow-testing associations have demonstrated that the feed of the dairy herd can sometimes be selected, balanced, and distributed among the individual cows in such a way as to decrease feed costs one-third and at the same time increase milk production.

No one should expect to derive either pleasure or profit from a scrub herd kept in a poorly lighted, unclean, and fly-infested stable, or from a herd which obtains its chief sustenance from a near-by stack of wheat straw. Fortunately such conditions are rapidly disappearing and in some localities have entirely disappeared.

Economy of production, however, is only half of the dairyman's problem. The truly efficient manager of a dairy farm must furnish a first-class product, then he must go a step further and get a price that corresponds to the quality of the article produced. High-testing milk should bring a higher price than low-testing milk, and it is not good policy to sell the former at a flat rate per hundred pounds, regardless of quality. High-grade dairy products should always command a price in accordance with their quality.

If a dairyman's business is well conducted it becomes highly interesting and fairly profitable. The successful dairyman drives his business, the business does not drive him; he does not merely keep cows, but makes the cows keep him. Such a dairyman may be expected to manage his farm so that he and his family can get both pleasure and profit therefrom.

ILLEGAL TRAFFIC IN GAME.

Interstate Shipments of Birds in Violation of Lacey Act.

Twenty-five persons handling game in interstate commerce in violation of the Lacey Act have received jail sentences, and a number of others have paid an aggregate of $12,500 in fines during the last four years. The fines range from $1 to $200, the latter being the maximum prescribed under the law. Some 700 cases in all have been investigated and of these, 350 have been reported for prosecution by the Bureau of Biological Survey of the department, which has charge of the administration of this statute.

The number of birds illegally shipped, and on which prosecutions were instituted, were 37,740 quail, 3,032 partridges (ruffed grouse), and 3,252 ducks. These figures represent, however, only the shipments in which the bureau was able to get evidence sufficient for prosecution. Venison also figured largely in illegal shipments, as upward of 10,000 pounds of this were shipped in violation of the law.

The bureau also has compiled information which indicates that in addition to the figures cited above, large numbers of birds have been shipped illegally under such conditions that the representatives of the department were not able to establish cases complete enough to warrant prosecution. It is believed that at least 99,523 quail were illegally shipped, and of these, 55,054 were from the States of Maryland, North Carolina, and Virginia. The number of partridges (ruffed grouse) involved was 10,302, and of ducks, 6,252. The number of ducks shipped illegally, at first thought, seems surprisingly small, because shipments of wild ducks greatly exceed those of any other wild game bird. It happens, however, that some of the States have not yet prohibited export of wild ducks, while others only recently have been able to make their laws effective in this particular. Reliable records show, for example, that at least 100,000 ducks were exported annually from the Big Lake district of Mississippi County, Ark., under a law permitting the export of ducks from that county. This law, however, was declared unconstitutional by the Arkansas Supreme Court on February 15, 1915, and this decision will bring this traffic within the purview of the Lacey Act.

SCHOOL LUNCHES.

(Continued from page 4.)

with bread-and-butter sandwiches, peanut sandwiches, fruit, cake.

(6) Hard-boiled eggs, crisp baking-powder biscuits, celery or radishes, brown-sugar or maple-sugar sandwiches.

(7) Bottle of milk, thin corn bread and butter, dates, apple.

(8) Raisin or nut bread with butter, cheese, orange, maple sugar.

(9) Baked bean and lettuce sandwiches, apple sauce, sweet chocolate.

The provision of a bottle of milk is suggested in one of the menus, but of course taking milk to school in warm weather would be impracticable unless means were provided for keeping it chilled until it is consumed.

The school lunch container, the specialists point out, should permit ventilation, exclude flies, and should be of a material which permits thorough washing in boiling water. If glasses, paper cups or spoons are provided, the child should be warned against letting other children use them. The child should be encouraged to wash his hands before each meal, and for this reason paper towels, paper napkins, or clean cloths should be provided. Food that does not require ventilation should be carefully wrapped in paraffin paper, and the soft or liquid foods should be packed either in jelly glasses, screw-top jars, or paper cups.

It is, of course, very good for the child to have at least one warm dish at noon—a vegetable milk soup, vegetable or fish chowder, meat and vegetable stew, or a cup of cocoa. These things are easily prepared on ordinary stoves with ordinary utensils in a school where interested mothers or teachers agree to do the cooking and serving and where dishes and spoons are available. Almost any school, however, could by cooperative arrangement with the parents see that the children get a cup of good milk at noon.

Soft fruits, such as berries, which are difficult to carry in lunch baskets also might be prepared at school. Where these dishes are provided at school (the meat or milk dish and the fruit) the lunch basket would omit the meat dishes, and provide merely bread and butter or crackers and cake.

UTILIZING FISH WASTE.

Valuable Stock and Poultry Food Can Be Produced with no Loss in Fertilizing Value.

Nearly 120,000 tons of valuable stock and poultry feed high in protein can be produced annually from the wastes of the salmon and sardine packing industries, and of the menhaden fish-oil and fish-scrap factories on the coasts. This is exclusive of additional wastes from the tuna packing companies and does not include a large additional tonnage of valuable stock feed that could be made from dog fish, now the bane of the market fisherman. This statement is made in Department Professional Paper No. 378, Fish Meal: Its Use as a Stock and Poultry Food, which was issued jointly by the Bureaus of Chemistry and Animal Industry after they had completed experiments in making a stock feed from fish waste and had tested it at the Government farm at Beltsville, Md., as a food for dairy cattle, pigs, and chickens.

According to the conclusions reached by the investigators, a vast amount of fish waste, which is now being used wholly for fertilizer and fish oil, can readily be made to yield a better quality of fish oil and a vast tonnage of a highly concentrated feedstuff. They point out that there will be little loss of fertilizing resources, because most of the valuable fertilizing elements in fish, which are retained in the fish meal, will be available in the manure of the animals fed on this form of concentrate.

The investigation was prompted by the large amount of waste, some 2,000 to 4,000 tons per season, resulting from the sardine pack in Maine. A large percentage of each sardine, including the head and some of the body, was cut off before the sardine was packed and this refuse was either thrown away or turned into fertilizer as fish scrap. The chemists thereupon conducted some large-scale experiments and found that after pressing out an unusually high-grade oil, the fish residue could economically and easily be turned into fish meal, which cattle, pigs, and poultry would eat readily and which, in addition, kept as well as meat scrap, meat meal, or other high-protein concentrates. The only requirement was that the fish residue should be made into meal while still fresh. On the other hand, where fertilizer was to be made, spoiling or rotting fish in no way lessened the value of the fish scrap, "pomace," or guano.

Tests with Fish Meal.

A ton of this fish meal, made in this way from sardine waste, after being stored about five months, was shipped to Washington and used in cooperation with the Animal Husbandry and Dairy Divisions in feeding dairy cows, growing pigs, and poultry. Analysis of the meal, which showed it to have a high protein and a desirable fat content, was as follows:

Analysis of meal.

	Per cent.
Water	4.74
Ash	16.68
Total nitrogen	9.68
Protein (N×6.25)	60.50
Fat	14.56
Crude fiber	.61
Salt (NaCl)	5.78

Results with Dairy Cows.

The preliminary results obtained by the Dairy Division of the Bureau of Animal Industry by feeding the fish meal described above to dairy cows were sufficiently satisfactory to warrant a more extended study of its value as a dairy feed. This work is to be undertaken during the coming winter. The preliminary experiments showed that the cows fed on a ration containing fish meal gave a greater yield of milk than cows fed on a similar basal ration containing no fish meal, but containing cottonseed meal. The milk from the cows which were fed fish meal contained a lower percentage of butter fat, but the total yield of fat obtained was approximately the same for the two groups. There was some variation in the readiness with which the animals ate the ration containing the fish meal. As a rule, cows which have not been highly fed on feeds for which they have a fondness will eat a fish-meal ration readily and are eager for it. In these tests the feeding of fish meal had no detrimental effect on either milk or butter.

Experiments with Pigs.

In the experiments to test the value of fish meal for growing and fattening pigs, fish meal was compared with tankage as a supplementary feeding stuff. The growing pigs, which were all in good thrifty growing condition, were about 3 months of age at the beginning of the experiment and were fed for 16 weeks. The following rations were fed:

Lot 1.—Eight pigs were fed 4 parts corn meal, 4 parts middlings, 1 part tankage.

Lot 2.—Four pigs were fed 4 parts corn meal, 4 parts middlings, 1 part fish meal.

The digester tankage was figured at $50 a ton and fish meal at $35 a ton, an estimate based upon the current prices of fish fertilizer at the time these experiments were made.

During the growing period the lot fed corn meal, middlings, and fish meal made a greater daily gain and a cheaper gain than the lot receiving the tankage supplement. The lot receiving the fish-meal supplement consumed 122.3 pounds more feed, gained a total of 28.5 pounds more and cost 36 cents less per 100 pounds of gain, than did the lot to which tankage was fed. At the close of the growing period the average weight of the pigs fed fish meal was 201.5 pounds, while that for the pigs getting the tankage supplement was 191.5 pounds, a difference of 10 pounds. From observation there could be noted no difference between the two lots with respect to growth in the way of general development which would indicate that one ration was not particularly superior to the other in meeting requirements for growth in pigs.

Finishing Period.

At the close of the 16 weeks' growing period the same 12 hogs were divided into different lots in order to have them as uniform as possible to start the finishing period of 28 days.

Lot 3 received 4 parts corn meal, 4 parts middlings, 1 part fish meal.

Lot 4 received 9 parts corn meal, 1 part fish meal.

Lot 5 received 9 parts corn meal, 1 part tankage.

The lot fed corn meal, middlings, and fish meal during the finishing period did not consume as much feed as the lot fed corn and fish meal or the lot fed corn and tankage. The cost of producing 100 pounds gain in the lot fed corn meal, middlings, and fish meal was 72 cents less than in the case of the lot fed corn meal and tankage; both lots, however, were about equal with respect to the average gain per pig during this period. The lot fed 9 parts of corn meal and 1 part of fish meal made a better showing than either of the other lots in the rate of gain, pounds of feed fed per 100 pounds gain, and the cost of 100 pounds gain.

From this experiment the conclusion is justified that fish meal is a very effective supplement to a grain ration for pigs. Hogs relish it and are extremely fond of it, principally because, like tankage, it is a flesh product.

In this experiment fish meal was superior to tankage in all comparisons, although the average daily gains and rate of gains in all three lots used in the experiment were exceptionally good.

Where fish meal can be obtained conveniently at a reasonable price and in suitable quantity it has a very considerable value in hog feeding.

Fish Meal as a Feed for Poultry.

In the poultry experiments a pen of laying hens receiving a ration containing fish meal was compared with a pen of the same breed fed with the same ration except that meat meal was substituted for fish meal. The mash fed consisted of one part each of bran, middlings, and fish or beef scrap, and two parts of corn meal. A grain mixture of equal parts of corn, wheat, and oats also was fed.

The yield of eggs from the pen fed on the ration containing fish meal averaged 145.4 per hen, at a cost of 8.5 cents per dozen and with a food consumption of 68 pounds per

hen. The average number of eggs per hen in the pen fed on the beef scrap ration was 160, at a cost of 9.7 cents per dozen and with 84 pounds of feed eaten.

The profit from the pen fed on beef scrap exceeded that of the pen on fish meal by 7 cents per hen, on account of the greater production in the former pen. At the price quoted ($46 per ton) fish meal has been nearly as profitable as beef scrap.

At the present time the hens have eaten the beef scrap a little more freely and have given a slightly greater egg yield. No differences were noted in regard to size or flavor of the eggs or the health and weight of the fowls.

In addition to the experiments actually conducted on the Government farm the investigators cite the results of many other experiments conducted by other investigators, particularly in Germany and Great Britain, where fish meal has long been recognized as a valuable supplementary food for animals. They point out that in this country, in spite of favorable reports of investigations conducted as early as 1877, fish meal never has been manufactured on a large scale nor has it been used extensively, largely, they believe, because of an unwarranted prejudice that fish meal would add an objectionable flavor to the meat or milk of animals and to eggs. This opinion, the investigators state, is not warranted. While in some cases the fish meal if fed very heavily might give a flavor to the meat of poultry, withdrawing them from this diet for a short period before they are killed would remove all suggestion of unusual flavor arising from this cause.

Opportunity for Important Industry.

A large portion of this professional paper is devoted to a discussion of the possibilities fish meal offers as a profitable industry for those now handling fish scrap for fertilizer. The fish waste, however, must be steam cooked while it is still fresh and has not decomposed. The excess of oil can then be pressed out and it is stated that the oil rendered from raw material in a perfectly fresh state is far superior to fish oil obtained from decomposed material. The former oil would require but little refining, for experiments show that in its crude condition it has a bright clear appearance, has very little fishy color, and is free from rancidity. Its keeping qualities are excellent. It is stated that at its present price the oil obtained at certain times in the sardine season is sufficient to defray the cost of manufacture of the dry meal. On the other hand, the fat in fish meat is highly digestible and has a definite food value, so that investigators believe it is unnecessary to do more than press out the oil in the ordinary ways to make the residue a desirable fish meal. This meal has a low water content and, it is stated, seems to keep well.

Use for Dogfish.

There is considerable difference in the fish meal obtained from fish waste containing a large portion of meat and that prepared from waste composed entirely of heads, tails, and fins. In the latter case gelatin or glue derived from the collogen of the cartilage, bones, and fins would predominate as a protein constituent, and this meal will not have so high a feeding value as one in which the protein derived from the meat or flesh of the fish predominates. In such instances where waste deficient in the protein constituents of whole fish predominates at a cannery, dogfish may be used to good advantage as a means of supplying this deficiency, as their flesh will increase the content of essential tissue-building material in the fish meal.

There appears to be no reason why there should not be a market for this fish meal, especially as a constituent of prepared stock feeds. Several manufacturers of such feeds have expressed their willingness to use the meal as a constituent. In the opinion of the investigators a promising field is opened up to the various fishing industries for the preparation of a valuable material either from waste residues or from whole fish not commonly used for food, and for the utilization of this material to better advantage than heretofore. For the farmer, stock raiser, and poultryman fish meal would make available from a hitherto neglected source a large supply of high-protein feeding stuff.

The total road mileage of New Jersey at the close of 1914 was 14,817.19, exclusive of streets in towns. Of this, 5,897.45 miles, or 39.8 per cent, were surfaced. Of the latter, 2,858.52 miles were gravel, 1,809.24 untreated macadam, and 417.63 miles bituminous macadam.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Secretary of Agriculture, David F. Houston.
Executive and administrative head of the department.

Assistant Secretary of Agriculture, Carl Vrooman.
Assists in directing the work of the department. In the absence of the Secretary becomes Acting Secretary.

Solicitor, Francis G. Caffey.
Is legal adviser to the Secretary and the heads of the several branches of the department, conducts its legal work, and represents it in all legal matters.

Office of Farm Management, W. J. Spillman, *Chief*.
Studies the details of farm practice from a business standpoint, with a view to determining the most efficient methods of operation.

Weather Bureau, Chas. F. Marvin, *Chief*.
Conducts meteorological investigations; issues weather maps; handles all work relating to climate, storm warnings, frost warnings, etc.

Forest Service, Henry S. Graves, *Forester*.
Administers the national forests and develops use of their resources; directs all research work relating to forestry and forest utilization.

Bureau of Animal Industry, A. D. Melvin, *Chief*.
Studies and gives information regarding live stock; conducts the meat-inspection and quarantine work.

Bureau of Plant Industry, Wm. A. Taylor, *Chief*.
Investigates problems relating to plants and plant industries.

Bureau of Chemistry, Carl L. Alsberg, *Chief*.
Enforces the Food and Drugs Act; investigates questions of agricultural chemistry.

Bureau of Soils, Milton Whitney, *Chief*.
Surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Entomology, L. O. Howard, *Chief*.
Studies insects in their relation to agriculture.

Bureau of Biological Survey, Henry W. Henshaw, *Chief*.
Studies wild birds and animals, their distribution, habits, and relations to agriculture; administers the Federal bird and game reservations and the Federal laws protecting game and regulating the importation of birds and animals. Controls noxious mammals and experiments in fur farming.

Bureau of Crop Estimates, Leon M. Estabrook, *Chief*.
Collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Office of Public Roads and Rural Engineering, Logan Waller Page, *Director*.
Studies and supplies information regarding road making, road management, road maintenance, farm irrigation, farm drainage, and rural engineering and architecture.

States Relations Service, A. C. True, *Director*.
Supervises the use of Federal funds for agricultural experiment stations and agricultural extension work; investigates agricultural education, and food, dietetics, clothing, and household equipment and management.

Office of Markets and Rural Organization, Charles J. Brand, *Chief*.
Investigates problems pertaining to marketing and distribution of farm products and organizing rural communities for marketing, rural credit, and other purposes. Enforces Cotton-Futures Act.

Federal Horticultural Board, C. L. Marlatt, *Chairman*.
Assists in the enforcement of the Plant Quarantine Act of August 20, 1912.

Insecticide and Fungicide Board, J. K. Haywood, *Chairman*.
Assists in the enforcement of the Insecticide Act of 1910.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., SEPTEMBER 20, 1916. No. 7

WASTE LAND EXPENSIVE.

Nonproductive Acres Represent Dead Capital and Are a Loss to the Farmer.

Every acre of nonproducing tillable land should be put to work or sold, says a new publication of the department, Farmers' Bulletin 745. Many farmers would make more money if their business were larger, but the size of a farm, from a financial standpoint, is measured not by the number of acres embraced in it but by the number that are producing crops, pasturing animals economically, or supporting a growth of marketable forest products. Nonproductive acres are loafer acres, and the money tied up in them is dead capital.

On every farm, however, there are certain areas necessarily devoted to nonproductive purposes. Fences, ditches, lanes, and building lots produce nothing themselves, but they are frequently essential to production on the rest of the farm. Nevertheless, they may occupy in the aggregate a considerable percentage of the available land. It is a part of efficient farm management to see to it that this percentage is no higher than necessary.

In this connection, some interesting figures are given by the bulletin already mentioned in regard to the amount of land occupied by fences of different kinds. It takes, for instance, only 209 rods of untrimmed hedge and only 214 rods of zigzag rail or worm fence to waste an acre of what might be productive land. For the same expenditure of land one can run 459 rods of woven wire and 473 rods of barbed wire. Other considerations, of course, may make it desirable to use the hedge or the worm fence, but the waste involved is a factor that should not be overlooked.

Similarly, farm lanes often may be eliminated by a simple rearrangement of fields; headlands, or turning spaces at the edges of fields, avoided; and the farmstead itself—the group of farm buildings with their lots and yards, the garden, and the orchard—made compact. In the case of the farmstead, however, considerations of health and attractiveness may well justify a slight sacrifice of economy.

While a little planning often will result in the saving of much land now devoted to these unproductive uses, a more difficult problem is presented by waste land—land that is rendered untillable by swamps, ravines, rocks, slopes, etc., woodland that produces nothing salable, and pastures that are too poor to be profitable. Some areas are, of course, hopeless, and in that case they should be left out of the reckoning altogether. Before this is done, however, it will pay to look into the possibilities of profitable reclamation. Many untillable fields, for example, may be turned into productive pastures, or, if they will not grow enough grass to make this economical, they can be used for the production of timber. On the other hand, it frequently happens that woodlots which yield nothing but a little firewood for home consumption are permitted to occupy valuable land. In deciding whether such lots should be cleared and tilled, the cost of clearing, the increased value of the cleared land, the interest on the investment, the salable value of the timber products, and the added expense for firewood which will follow the disappearance of the timber must all be taken into account. With unwooded areas, the advisability of bringing them under the plow may be determined by comparing the probable cost with the market price of good arable land in the neighborhood.

Obviously, the higher the price of land rises the more incentive there is for the farmer to avoid waste in the utilization of it. It is significant, however, that the investigations of the department have shown that, irrespective of the price, tenants put a greater part of the land to productive use than owners. The tenant pays rent for each acre and he can not afford to have any of them idle. On the other hand, the man who has no rent to pay may be able to get along on the produce of a part only of his farm, and he is, therefore, more likely to overlook the potential value of the part he wastes. By so doing he is, of course, throwing away opportunities to make money, but this is not always appreciated by those who have not grasped the important fact that the average farm is too small for maximum efficiency and that in the majority of cases to increase the size of the farm business is to increase the profits from it. Those owners, however, who, realizing this, are operating leased land in addition to their own, are, like tenants, careful to see that they pay for no loafer acres.

To anyone who is buying or leasing land, then, the important question is not "How much am I paying an acre for this tract?" but "How much am I paying for the acres

(*Continued on page 4.*)

C0165°—16

MARKETING PROBLEMS.

Questions Regarding Distribution of Products to Be Answered for Farmers, Dealers, and Consumers.

The realization that the general lack of information in regard to the marketing of farm products was proving exceedingly costly to the American farmer and the American consumer led to the organization, in the spring of 1913, of the Office of Markets. Provision for the new agency was made by Congress in the belief that the collection and dissemination of information in regard to efficient marketing practices might eliminate much waste and return substantial benefits both to producers and consumers.

The farmer, it was realized, was toilfully raising his crops only to learn in many instances, when he undertook the business of exchanging them for money, that he did not know accurately what he had produced and did not understand how to dispose of it to best advantage. He was confused by the numerous market channels through which his products might pass, and by the realization at the same time that he was not in possession of the data necessary for an intelligent choice among those various routes. He found unsolved marketing problems at practically every stage of the journey made by his commodities from the farm to the hands of the ultimate consumer.

Marketing in Early Days.

Practically no such marketing problems confronted farmers during early days in the United States. If eggs were to be disposed of, for example, the owner rarely had more than three possibilities before him. He might sell them directly to consumers in a near-by town, barter them to a neighbor for some other product, or sell or trade them at a store. Under the complex marketing conditions of to-day, on the other hand, eggs originating on a remote farm in the corn belt may be borne, after they leave the farmer's hands, by little understood market forces through devious channels to some family in the heart of a many-storied city apartment thousands of miles away.

The great complexity in the modern marketing system which is in such contrast to the simple, direct dealings of early days has been brought about by the rapid expansion and development of the country. The marked

concentration of population in cities has been an especially important factor. The early towns drew their supplies from their immediate vicinities. The farmer drove with his commodities from his near-by farm and either retailed them himself from his wagon in the market place or sold them to retail stores. As the towns grew into cities with large populations, however, the surrounding zones of farm lands could no longer supply the food needs. Railroads were extended and new and more distant producing areas were tapped. Commercial transportation thus entered as a factor in marketing.

Effects of Railway Development.

The necessity for large-scale shipments arose in connection with railroad transportation, bringing about the entrance of commercial buyers and shippers at the country end, and wholesalers, commission men, jobbers, retailers, and other distributors at the city end of the lengthening market channel. Provision was made for the storing of surplus products and later for the cold storage of perishables. These changes introduced other complications into the marketing system. The use of refrigerator cars followed and greatly increased the distances over which perishables could be transported. It became possible even for a city to draw its fruits, vegetables, meats, and other foods from regions thousands of miles away. These improvements all paved the way for the marketing of perishable fruit and truck on the modern elaborate plan by which the products, as rapidly as they mature in one region after another from the extreme south to the northward, are rushed to northern market points, arriving there weeks and months in advance of the appearance of local products.

The development of long-range marketing created additional needs for improved market procedure, some of which have not yet been met completely. One such need is for standardization of products. Since sellers of products may be at one end of the country and buyers at the other when sales are negotiated, it is often impossible for the purchaser to see what he is buying. To afford protection under such conditions it is therefore desirable that there be generally accepted standards for different products.

Growth of Intermediate Agencies.

All the many market developments which came about as a result of the great development of the country tended to thrust the farmer farther and farther from the consumer of his products and interposed between these two terminal factors in the marketing system an ever-increasing group of intermediaries. Buyers, transportation systems, warehousemen, wholesalers, jobbers, commission merchants, brokers, and retailers all rose up to take part in the marketing procedure. The farmer, and in many instances the consumer, felt that the number of these intermediaries was too great and that this condition made for unjustly low returns to the producer and unfairly high prices to the consumer. Whether this opinion is justified or not, in some instances it is certain that it was reached without adequate data on which to base it, for no studies have been made to determine which marketing functions were essential and which, if any, might be dispensed with. Little was known, also, of the costs of the services.

Office of Markets Organized.

These were some of the chaotic conditions in the marketing machinery of the country which led to the establishment of the Office of Markets as a governmental agency. The department's commission from Congress to take up marketing work was in the form of an appropriation of $50,000 "to enable the Secretary of Agriculture to acquire and diffuse among the people of the United States useful information on subjects connected with the marketing and distribution of farm products." It was necessary that this should be the first step in the governmental marketing work, for the great need of producers, consumers, and dealers alike was for full knowledge in regard to existing market procedure in order that they might judge adequately of the possibilities for betterment. So great was this need for facts that the Office of Markets found its field much larger than it could at first fill. It has had, therefore, to select some of the fundamental and more urgent problems from among the many facing the farmer, concentrating its attention for the time on those. After the second year of the marketing activities the rural organization work was combined with that of the Office of Markets under the title of Office of Markets and Rural Organization. In the years following the inauguration of the work Congress has greatly increased the annual appropriation of the office. The appropriation for the fiscal year ending June 30, 1917, is $872,590.

Realizing that a better understanding by the farmer of the whole existing machinery of marketing was desirable, the office undertook and is carrying out as one of its projects a survey of markets, methods, and costs. This includes surveys of the origin and movement of specific commodities as well as the conduct of a market news service which gives producers and dealers from day to day their first specific, country-wide information in regard to the supply of and the demand for perishable farm products. As another project the office has taken up a study of the standardization, grading, and packing of products. Through this work it is hoped to furnish a more nearly universal language of marketing and systems of grading or classification which will make known to the producer exactly what he has for sale, and which will permit the consumer or dealer to know in advance exactly what he is purchasing.

Problems Taken Up.

The individual farmer, as compared with other producers, is placed under a greater handicap in marketing because the comparatively small scale of his enterprise adds greatly to his handling costs and marketing complications. To overcome this difficulty farmers in some parts of the country have formed cooperative shipping associations, pooling their produce and so making possible large shipments of carefully graded, uniform products, properly packed. One of the lines of work undertaken by the Office of Markets and Rural Organization is the thorough investigation of such associations to determine effective plans of organization, and the marketing and other functions which such cooperative groups can perform advantageously. The office, in this connection, is making a digest of State laws relating to cooperative associations for the convenience of States wishing to better their statutes and for departmental use in advising in regard to community organization in the several States.

The failure to conduct marketing operations on a thoroughgoing business basis is responsible for many of the losses and high costs of service in marketing, it is believed. In the hope of reducing such losses and costs the Office of Markets and Rural Organization is making a close study of marketing business practice, especially as it affects cooperative enterprises. The office also is looking carefully into problems of transportation and storage, is scrutinizing closely the possibilities of the parcel post and express as direct marketing agencies, and is making a survey of city marketing and distribution as now conducted.

In addition to these general marketing questions, the office, in its investigational work, has taken up problems relating to the marketing of a number of specific commodities of importance which involve factors not encountered in the general marketing projects. The marketing of live stock, meat, and animal by-products is being studied under one such project. The marketing of dairy products is the subject of another project; investigations also are being made of the special problems of grain marketing and of the handling, marketing, and utilization of cotton and its by-products.

In taking up this work the Office of Markets and Rural Organization has entered a virgin field in so far as governmental activities are concerned. It has found, also, that practically no broad investigational work has been done heretofore in the marketing field even by individual investigators and students. The office has found it necessary, therefore, to feel its way carefully into the new fields, shaping its

(*Continued on page 8.*)

HOUSEHOLD DEVICES.

Homemade Labor-Saving Conveniences Which Reduce the Housewife's Work and Cost But Little.

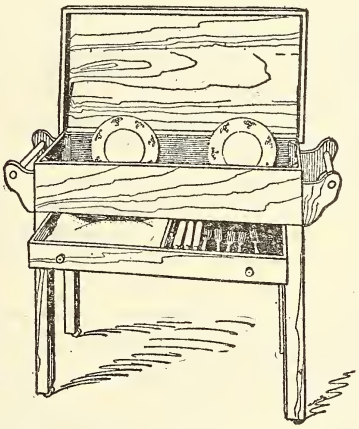
A number of labor-saving devices which will lessen the housewife's work may be constructed quickly and easily. The following contrivances actually being made and used by women county agents in the field and by the women who are working as their demonstrators in connection with the extension work, south, States Relations Service, can be made on the farm during spare time:

Scrubbing Chariot.

The "scrubbing chariot" consists of a comfortable padded frame on rollers which enables the housewives, in wiping the floors, to do the scrubbing with more ease and comfort and save a great many steps. This may be built at a very small cost, the material needed consisting of a ¾ inch plank, 20 by 10 inches, 2-inch strips for the sides, which should be 8½ inches long by 4 inches wide, and a front piece of the same material 20 inches long and 4 inches wide. An ordinary soap box can be used for this by cutting down the size to about 5 inches high and knocking out one side. The padding for the bottom of the chariot may be made of burlap. Tack this around the inside of the chariot and place the whole thing on four rollers. Place a soap dish on one side and a little rack for the scrubbing brush on the opposite side. This contrivance, it is estimated, costs about 47 cents.

Combined China Closet, Serving Table, and Roller Tray.

Another step-saving device made by the members of the demonstration club mentioned is a roller tray wagon. This convenience comprises a china closet, serving table, and roller tray all in one. This device was built by using a box 5 inches deep for the top and placing it on 4 wooden posts for legs. Dimensions: Top of table 31½ inches long by 16½ inches wide and 29 inches high, and a serving compartment 5 inches deep. The top of the table is put on hinges and straps or small chains fastened to it to keep the top from falling back too far when opened. The bottom of the serving compartment is 5 inches below this top. Around the sides of this compartment are little screw hooks on which the cups may be hung. In the compartment, which may be lined with white oilcloth, is space for serving dishes for six. Below the serving compartment is a drawer which is divided in the center by a one-half inch strip. One side is used for the linen and one side for the silver. The side used for the silver is lined with blue outing flannel because this serves the same purpose and is cheaper than felt. A spool was cut into halves to make the knobs for the drawer and a pair of these knobs was placed on each side so that the drawer could be used from either side. The legs were square pieces of wood 1½ inches square with rollers. Old rubber-tired wheels from toy wagons or discarded baby coaches may be used. This is an improvement because the tray rolls noiselessly. In some cases the legs from old tables can be used in place of having these made. At each end two brackets were placed so that the table could be pushed or pulled. When the soiled dishes were taken to the kitchen and washed, they were placed in this serving compartment with one handling only, the lid placed down and the roller tray rolled into the dining room, with the dishes and silver ready for setting the table at the next meal. It is not necessary to put them away because they are out of the dust when the top is down. The estimated cost of this convenience is:



Combined china closet, serving table, and roller tray.

Dry goods box	$0.25
1 yard blue outing flannel	.10
1 remnant white oilcloth	.15
2 hinges	.10
4 rollers	.15
1 can of mahogany stain	.30
Total	1.05

With a small doily and a vase of flowers this roller tray answers the purpose of a serving table and makes a very attractive piece of furniture.

Folding Ironing Board.

Another step saver that may be added to the list is the folding ironing board and cover. This device, which is hinged to the wall, is always ready and in place. It may be hooked up against the wall out of the way when not in use. The leg is hinged to the board and falls flat when the board is lifted. With it down and in use, the leg is not in the way, and skirts may be ironed without any lifting or changing. The directions for making follow:

IRONING BOARD.

Length, 57 inches; rounded at free end. Width, attached end, 15 inches; free end, 10½ inches. Leg, 58½ inches, to be changed to suit height of board; attached to board 11 inches from free end.

Board to be attached by hinges to the wall 33 inches from the floor. For use by a person above average height, the board should be higher, which will necessitate a longer leg. Board to be made of thoroughly seasoned wood 1½ inches in thickness.

COVER.

Pad: Any heavy material such as canton flannel or a partially worn-out blanket. Cut shape of board, allowing 2 inches on each side and end. Bring extra 2 inches to underside of board and tack firmly and smoothly in place.

Ironing sheet: Unbleached muslin (homespun). Cut shape of board, allowing 4 inches on sides and end and hem all around. Attach tapes on opposite sides about 10 inches apart. Tie the sheet on with these tapes. Make two sheets.

The cover and sheet may be left on when putting the board up by allowing sufficient space when adjusting the button or screw hook and eye which holds the board in place.

MAKING A NEW LAWN.

September Best Time for Planting in North Central and Middle Atlantic States.

The early part of September is the best time for seeding a new lawn in the States south of New England and north of the Potomac and Ohio Rivers, according to plant specialists of the department. Likewise, the repairing of lawns in this region is much more likely to be successful if undertaken in the early autumn rather than in the early spring. The reason late summer and fall planting is preferable where climatic conditions will permit is that young grass does not stool well in spring and summer and is not aggressive enough during these seasons to combat weeds. In the northern tier of States and New England these conditions do not hold, and spring is the best time for lawn work. At that time in the extreme North the soil is more open than later in the season and offers a better seed bed.

Soil Preparation.

The first consideration in making a new lawn is a suitable soil. This should be well

drained and of good texture and should be thoroughly prepared. A good loam will need only enrichment. This may be brought about best by a dressing of well-rotted barnyard manure thoroughly worked in. If manure is not available, 20 pounds of bone meal for each 1,000 square feet may be substituted. If the lawn site is of stiff clay both sand and humus or decayed vegetable matter must be worked in if a good turf is to be secured. There is little danger of using too much of either of these materials. Light sandy soils should have clay and humus worked in to increase their water-holding capacity. The humus may be supplied in the form of manure compost or soil from mushroom beds at the rate of one-half ton to 1,000 square feet of area. After the proper constituents are supplied the lawn soil should be thoroughly stirred and fined. This preparation should begin several weeks before seeding time to allow sufficient time for the ground to settle and for weed seeds to germinate.

Kentucky blue grass is, in general, the most desirable turf-forming grass for lawn use in the northern part of the United States. For best results it usually is made the predominant ingredient in mixtures containing also the seeds of several other grasses and white clover. A mixture found satisfactory by department specialists consists of 17 parts of Kentucky blue grass, 4 parts recleaned redtop, 3 parts perennial rye grass, and 1 part white clover. Those planting lawns must not make the mistake of sowing their seed too thinly, for a thick stand of grass is essential at the beginning. From 4 to 5 pounds of the above mixture should be sown for each 1,000 square feet of area. The seed may be covered over a small area by hand raking or, on a large area, by a weeder. After the seeds are covered the planted area may be rolled lightly.

WASTE LAND EXPENSIVE.

(*Continued from page 1.*)

that are going to work for me?" In the new bulletin it is calculated that a farm of 100 acres, selling at $100 an acre, will cost the purchaser actually $111.11 an acre if 90 per cent of it is productive, and $200 an acre if only 50 per cent of it is productive. As a matter of fact, the percentage of improved land in farms east of the Mississippi is only 59.5 and west of that river only 50.8. Improved land, however, it should be noted, is not always the same as productive land. A good timber lot, for example, is not improved, but it may be highly productive, and farm buildings and fences stand on land that is improved but produces nothing. In the final analysis it is the amount of productive land that determines the earning capacity of a farm, and that should therefore determine its price.

VIOLATIONS OF LAW.

Penalties Imposed for Misbranding and Adulteration Under Food and Drugs Act.

The facts in 100 actions under the Food and Drugs Act are presented in Notices of Judgment, in Service and Regulatory Announcements, Bureau of Chemistry Supplements 17 and 18, recently issued by the department. Many of the actions are based on false and fraudulent claims as to the curative powers of so-called remedies and cures. The others relate to the adulteration or misbranding of foods, beverages, stock feeds, and mineral waters. The medicinal preparations are recommended by the manufacturers for a great variety of ailments, the recommendations for the lot covering nearly all the diseases to which the human family is liable. Claims are made on the labels and in the advertising literature accompanying the packages for the benefits that will follow the persistent use of the various preparations as blood purifiers; pain killers; kidney, liver, stomach, bowel, lung, heart, or nerve remedies; and as reliefs, remedies, or cures in tuberculosis, pneumonia, cancer, fevers, rheumatism, catarrh, cholera, diphtheria, tonsillitis, asthma, croup, or other diseases.

It was stated by the officials in charge of the enforcement of the Food and Drugs Act that the extravagant claims made by the manufacturers or promoters of the so-called remedies and cures were false and fraudulent, that the preparations could not possibly accomplish the results claimed, and that in many cases the preparations were absolutely worthless in the treatment of the diseases for which they were recommended. In the opinion of the officials in charge of the enforcement of the Food and Drugs Act, many of these patent medicines not only give no relief in the treatment of the ailments for which they are recommended by the manufacturers but often do positive injury in that the victim relies upon the efficacy of the worthless preparations until it is too late to obtain benefit from treatment which would be adequate if begun in the early stages of the disease.

In one case a fine of $300 and costs was imposed, and in a number of instances penalties ranging from $50 to $100 and costs were assessed. In some of the cases where seizure of the goods had been effected the court ordered them destroyed. In one case where the responsible party pleaded guilty judgment was suspended on the payment of costs.

The Notices of Judgment in the issues of the Service and Regulatory Announcements referred to cover the following products:

Cases terminated under Food and Drugs Act.

Name.	Address.	Article.	Charge.	Fine or decree.
Walker Medicine Co.	St. Paul, Minn.	Walker's Pain Destroyer	Misbranding	$5.00
Black Distributing Agency.	Nashville, Tenn.	Black's Pulmonic Syrup	do	[1] 300.00
The Musterole Co.	Cleveland, Ohio	Musterole	do	[1] 25.00
J. H. Snyder Medicine Co.	Jonesboro, Ark.	Snyder's Bitters	do	[1] 10.00
John A. McGill	Chicago, Ill.	Dr. Jno. A. McGill Orange Blossom Female Suppositories.	do	[1] 50.00
The Columbus Pharmacal Co.	Columbus, Ohio	Tuberculoids	do	[1] 20.00
E. Morgan & Sons	Providence, R. I.	Dr. Miller's Vegetable Expectorant	do	20.00
Dr. A. B. Simpson Co.	Richmond, Ind.	Dr. Simpson's Vegetable Compound.	do	[1] 25.00
Hamlin's Wizard Oil Co.	Chicago, Ill.	Hamlin's Wizard Oil	do	[1] 200.00
Dr. A. W. Acker Chemical Co.	Selma, Ala.	Tu-Ber-Ku	do	([2])
Stuart Remedy Co.	Detroit, Mich.	Dr. Stuart's Specific Drops	do	50.00
A. P. Ordway & Co.	New York, N. Y.	Dr. Kaufmann's Sulphur Bitters	do	100.00
Swanson Rheumatic Cure Co.	Chicago, Ill.	5 Drops	do	[1] 200.00
James F. Ballard	St. Louis, Mo.	Collins' Ague Remedy, Swaim's Panacea, and Swayne's Panacea.	do	[1] 30.00
George Bayne	Bayonne, N. J.	Dr. D. M. Elmore's R'eumatine Goutaline.	do	10.00
Carpenter & Pierce Co.	Troy, Pa.	Armstrong's Croup Ointment	do	[1] 10.00
James I. Johnson	Raleigh, N. C.	Anticephalalgine	do	([3])
Dr. Sullivan Sure Solvent Co.	Buffalo, N. Y.	Dr. Sullivan's Sure Solvent	do	25.00
Temple of Health Medicine Co.	San Francisco, Cal.	Hesperian Tonic and Temple of Health.	do	100.00
Cutler Bros. & Co.	Boston, Mass.	Vegetable Pulmonary Balsam	do	100.00
Davies, Rose & Co. (Ltd.)	do	The-Best Cough Remedy	do	50.00
The Spohn Medical Co.	Goshen, Ind.	Spohn's Distemper Cure	do	[1] 50.00
The Foster-Dack Co.	Chicago, Ill.	Mecca Compound	do	[1] 50.00
The American Croxone Co.	Cleveland, Ohio	Croxone	do	[1] 25.00
Birch Mountain Tea Co.	Buffalo, N. Y.	Birch Mountain Medicinal Tea	do	25.00
Russell Medicine Co.	Providence, R. I.	Russell's White Drops	do	20.00
Thacher Medicine Co.	Chattanooga, Tenn	Stella-Vitæ (Star of Life)	do	[1] 75.00
Freeman Pharmacal Co.	Portland, Me.	Dr. Freeman's Balsam of Fir Wafers.	do	40.00
E. Morgan & Sons	Providence, R. I.	Gem Balsam	do	20.00
Edwin H. Moore	Pittsburgh, Pa.	Pneumovita (Life of the Lungs)	do	[1] .06¼
George H. Mayr	Chicago, Ill.	Mayr's Wonderful Stomach Remedy.	do	[1] 25.00
Schuh Drug Co.	Cairo, Ill.	Schuh's Yellow Injection and Schuh's White Mixture.	do	[1] 10.00
The Acme Chemical Mfg. Co. (Ltd.).	New Orleans, La.	H G C	do	[1] 100.00

[1] And costs. [2] Goods destroyed. [3] Judgment suspended on payment of costs.

Cases terminated under Food and Drugs Act—Continued.

Name.	Address.	Article.	Charge.	Fine or decree.
Wright Medicine Co.	Peru, Ind.	Wright's Rheumatic Remedy	Misbranding	[1] $50.00
Dr. Herrick Family Medicine Co.	St. Louis, Mo.	Renne's Pain Killing Oil	do	[1] 10.00
Independent Pharmaceutical Co.	Worcester, Mass.	Trional Tablets, Hydrastis, and Acetanilid Tablets.	Adulteration and misbranding.	25.00
The C. Hughel Co.	Indianapolis, Ind.	Dander-Off	Misbranding	[1] 50.00
S. B. Goff & Sons Co.	Camden, N. J.	Goff's Cough Syrup and Goff's Herb Bitters.	do	25.00
Hilker & Bletsch Co.	Chicago, Ill.	Oil Cassia	Adulteration and misbranding.	[1] 50.00
E. Morgan & Sons	Providence, R. I.	Dr. Haynes' Arabian Balsam	Misbranding	20.00
Thacher Medicine Co.	Chattanooga, Tenn.	Dr. Thacher's Liver and Blood Syrup.	do	(2)
Do	do	Stella Vitæ	do	(2)
Root Juice Medicine Co.	Fort Wayne, Ind.	Root Juice Compound	do	(2)
Acid Iron Mineral Co.	Salem, Va.	A-I-M Cough Syrup	do	(2)
Do	do	Acid Iron Mineral Compound	do	(2)
Youngstown Cider & Vinegar Co.	Youngstown, Ohio	Vinegar	Adulteration and misbranding.	[1] 20.00
C. D. Gregg Tea & Coffee Co.	New York, N. Y.	Olive oil	do	10.00
J. Quincy A. Nimerick	Hamburg, Ill.	Apples	do	[1] 25.00
Luigi Vecchi (Inc.)	New York, N. Y.	Tomato paste	do	50.00
The Myers & Hicks Co.	Baltimore, Md.	Lemon flavor and bakers' vanilla flavor.	do	15.00
Erie Distilling Co.	Buffalo, N. Y.	Cognac brandy type	do	25.00
The Grand Wholesale Wine & Liquor Co.	Chicago, Ill.	Special cognac	do	[1] 10.00
Thompson-Reid Ice Cream Co.	do	Ice cream	Misbranding	[1] 10.00
Sethness Co.	do	Oil of lemon	Adulteration and misbranding.	[1] 25.00
Hess Bros.	New York, N. Y.	Confectionery	Adulteration	5.00
Novelty Candy Co.	Chicago, Ill.	Candy	do	[1] 10.00
Hardie Bros. & Co.	Pittsburgh, Pa.	do	do	[1] 25.00
E. Greenfield's Sons	New York, N. Y.	Confectionery	do	5.00
James A. McClurg & Sons.	do	do	do	5.00
Bowden Lithia Springs Water Co.	Atlanta, Ga.	Bowden Lithia Water	Misbranding	50.00
Novelty Candy Co.	Chicago, Ill.	Candy	Adulteration	[1] 10.00
James A. McClurg & Sons.	New York, N. Y.	Confectionery	do	5.00
Thomson & Taylor Spice Co.	Chicago, Ill.	Lemon oleum	Misbranding	[1] 50.00
Durand & Kasper Co.	do	Artificial strawberry and artificial pineapple flavorings.	do	[1] 25
Do	do	Vanilla extract, lemon extract, orange extract, artificial pineapple flavoring, and artificial strawberry flavoring.	Adulteration and misbranding.	[1] 25
Conrad Seipp Brewing Co.	do	Beer	do	[1] 100
Lepman & Heggie	do	Frozen mixed eggs	Adulteration	[1] 200
Sobiesky Bottling Works.	do	Ginger ale	do	[1] 25
Home Mail Order Co.	do	Extract of lemon and extract of orange.	Adulteration and misbranding.	[1] 25
Sethness Co.	do	Oil of lemon	do	[1] 25
The Castleman-Blakemore Co.	Louisville, Ky.	Sorghum	do	50
Edelman Distillery Co.	Evansville, Ind.	Apple brandy	do	[1] 50
The Francis Cropper Co.	Chicago, Ill.	Crystallized peach and honey	do	[1] 50
Sulzberger & Sons Co.	do	Sulzberger's high protein tankage.	Misbranding	[1] 100
The Quaker Oats Co.	do	Schumacher Calf Meal	do	[1] 100
The Eastern Tanners Egg Yolk Co.	Baltimore, Md.	Liquid eggs	Adulteration	(2)
Do	do	Shell eggs	do	(2)
F. B. Washburn & Co.	Boston, Mass.	Macaroons	Misbranding	50
Union Macaroni Co.	Wilmington, Del.	Macaroni	do	(2)
Westside Roasting and Milling Co.	New York, N. Y.	Coffee	Adulteration and misbranding.	(2)

[1] And costs. [2] Goods destroyed.

SEED-IMPORTATION ACT AMENDED.

The seed-importation act of August 24, 1912, prohibits the importation into the United States of those seeds subject to the act when they are adulterated or contain 3 per cent or more of weed seeds, or when clover and alfalfa seed contains more than approximately 90 seeds of dodder per pound.

This act was amended on August 11, 1916, by including the seed of ryegrass and vetch in addition to those seeds enumerated in the original act and by prohibiting the importation of seeds which contain less than 65 per cent of pure live seeds, except that the seed of Kentucky blue grass and the seed of Canada blue grass may be imported when it contains 50 per cent or more of live pure seed. The amendment fixing a minimum quality for imported seed is intended to keep out of the United States seed of low germination, as well as seed containing large proportions of chaff, both of which have been imported in large quantities in recent years.

The regulations for the enforcement of the seed-importation act, published as Treasury Decision No. 35363, on May 6, 1915, and as Service and Regulatory Announcements, Bureau of Plant Industry, No. 2, May, 1915, are being revised to conform with these amendments, and it is expected that they will be promulgated to be in effect on and after November 1. 1916,

COTTON-FUTURES ACT.

Reenactment of the Law Necessitates but Few Modifications of Rules and Regulations.

The following information is taken from Service and Regulatory Announcements No. 10 of the Office of Markets and Rural Organization of the department.

The act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1917, and for other purposes, approved August 11, 1916 (Public, No. 190), contains a renactment, effective September 1, 1916, of the United States cotton-futures act of August 18, 1914, with a few changes, the more important of which are, substantially, as follows:

In the seventh subdivision of section 5 authority is conferred upon the Secretary of Agriculture, in case of disputes referred to him, to include in his findings a complete classification of the cotton for the purposes of delivery on future contracts. Under the act of August 18, 1914, his findings were confined to the specific question of grade, quality, or length of staple in dispute. For example, if the dispute involved grade only and the cotton was found to be less than seven-eighths of an inch in length of staple, the Secretary had no authority to include in his findings a statement as to the length of staple.

A new section, known as section 6A, is inserted, which provides an optional contract under which parties may, without being subject to tax, agree that, under certain specified conditions, the buyer may demand delivery of the basis grade named in the contract.

Section 11 of the act of 1914, which taxes orders sent abroad, for the making of future contracts made on foreign cotton exchanges unless certain conditions are complied with, is omitted in the new law.

Section 13 confers certain additional authority on the Secretary of the Treasury in connection with the performance of the duties imposed upon him.

While the date on which the act becomes fully effective is September 1, 1916, section 21 provides that so far as concerns any transaction entered into prior to September 1, 1916, the old law shall remain in force with the same effect as if the new act had not been passed.

Changes in the Rules and Regulations.

On August 12, 1916, the Secretary of Agriculture adopted, for the purposes of the new law, and published in Circular No. 64, the rules and regulations in force under the act of 1914, with but few modifications.

In accordance with the authority granted to make a complete classification of cotton

involved in disputes referred to the Secretary of Agriculture, the necessary changes were made in regulation 2, sections 3, 5, 6, and 31. These relate to the statements which must be made in papers filed in disputes, and the amounts which may be required as advance deposits and assessed as costs. In section 17 there is included a requirement that each sample shall represent accurately the cotton in the bale, shall not have been previously handled for purposes of classification, and shall weigh not less than 4 ounces.

A new section, 32, is inserted in regulation 2, to the effect that disputes as to the classification of cotton tendered under section 6A contracts shall be referred and determined in accordance with, and shall be subject to, the rules and regulations prescribed for disputes arising under section 5 contracts.

In regulation 3, section 1, Atlanta, Ga., is added to the list of markets designated as bona fide spot markets within the meaning of the act. No change, however, is made in the list of markets designated for the purpose of determining commercial differences in the settlement of section 5 contracts.

In regulation 5, section 2, a complete schedule of costs of copies of practical forms of the Official Standards and for replacements thereof is set out.

Other changes made in the regulations are merely incidental or relatively unimportant.

In disputes referred to the Secretary of Agriculture after September 1, 1916, it will be necessary for the parties to distinguish between those arising under contracts made prior to September 1, 1916, and contracts made on or after that date. Disputes arising under contracts made subject to section 5 of the act of 1914 may be referred and determined only in accordance with the rules and regulations in force under that act, while those arising under contracts made subject to section 5 or section 6A of the new law will be subject to the rules and regulations issued under the act of August 11, 1916.

In determining disputes which may be referred to the Secretary of Agriculture under the new law, the definitions of various terms, mentioned in the fifth subdivision of section 5, which were published in Service and Regulatory Announcements No. 2, issued February 13, 1915, will be used.

LARKSPUR POISONING.

Exhaustive Report on Investigations of Serious Losses of Range Cattle.

Larkspur poisoning has been found, in an exhaustive study conducted by the department, to be, with the exception of loco poisoning, the greatest cause of loss in western cattle herds. Losses, it is said, are reported from all the mountain regions between Mexico and Canada and from the Rocky Mountains on the east to the coast on the west.

The recent experiments conducted by the department, a report of which is published in Professional Paper No. 365, indicate that the various species of larkspurs are poisonous to cattle and horses, but not to sheep. Except under unusual circumstances, however, horses do not eat enough of the plant to produce any ill effects. From a practical standpoint, therefore, it may be said that larkspur affects cattle only. It was also found that a quantity of the weed equal to at least 3 per cent of the weight of the animal was necessary to produce poisoning.

In the opinion of the investigators the fact that sheep are apparently able to feed upon larkspurs with entire impunity may be utilized in some cases to protect the cattle. Where larkspur is especially abundant, the paper already mentioned says it is desirable to use the range for sheep rather than for cattle, or to combine sheep grazing and cattle grazing in such a manner that the areas infested with larkspur shall be first eaten down by the sheep. On comparatively limited areas it may be possible to dig up the tall larkspur; but this is frequently too costly a measure to be adopted, and, furthermore, it is rarely possible to eradicate completely the poisonous weed.

Generally speaking, there are two great groups of larkspurs—the tall and the low. The low disappear from the range early in July, and cases of poisoning from them are usually confined to the months of May and June. The tall larkspurs live through the summer season, making their first appearance in early spring. This is the time in which they are the most poisonous. After blossoming, their poisonous character appears to diminish. Ultimately it disappears and the plant dries up, although the seeds remain poisonous. In Colorado most of the cases of poisoning from the tall larkspur occur in May and June, with sporadic cases in July. In other localities, however, the larkspurs blossom later, and poisoning may occur as late as August or even September.

On the range the first evidence that the animal has been poisoned is frequently afforded by its falling down. After a short interval it will probably regain its feet, only to fall again. As the effect of the poison wears off, the animal is able to keep its feet for longer and longer periods, and finally walks off very much as if nothing had happened. In severer cases it is ultimately unable to regain its feet at all and dies. Government experiments indicate that beneficial results may be obtained by treating the poisoned animals with hypodermic injections of physostigmin salicylate, pilocarpin hydrochlorid, and strychnin sulphate. If necessary, these treatments may be followed by hypodermic injections of whisky.

THE ARGENTINE ANT.

Imported Pest That Is Becoming Widely Distributed Throughout Southern States.

The Argentine ant is one of the most serious of household pests in portions of several of the Southern States, according to the entomologists of the department. In a new department bulletin by Ernest R. Barber, No. 377, The Argentine Ant: Distribution and Control in the United States, it is stated that if the activities of the ant were confined to the household alone the problem of controlling it would be sufficiently difficult, but the fact that, like some other ants, it protects and attends mealy bugs and aphids, which infest cotton, corn, and sugar-cane fields, and thus becomes a pest to crops, and the further fact that it is steadily spreading in all directions throughout the Southern States make the problem of control still more difficult.

It is practically certain, states the bulletin, that the Argentine ant was introduced into this country at New Orleans in ships from Brazilian ports. It was first observed in that city in 1891, and at present it is distributed throughout portions of nine Southern States. There are three forms of the Argentine ant, the worker, the male or drone, and the queen, all of a dark-brown color. The worker is about one-tenth inch in length, the male is somewhat larger and has wings, while the queen is nearly three times as large as the worker.

Because of its small size and inconspicuous color, the worker is able to invade nearly every part of ordinary buildings. Any exposed food or food refuse attracts the workers, and the bulletin states that residents and keepers of grocery stores, meat markets, confectioneries, etc., must either suffer considerably or almost constantly use poison or barriers of various kinds. The farmer, nurseryman, and truck grower find scale insects and aphids more troublesome because of the protection the ant gives to insects depositing honeydew.

Three methods of controlling the insect are discussed in the bulletin—the use of barriers, poisons, and traps.

Ant barriers.—In grossly infested houses much relief may be secured by isolating tables, refrigerators, safes, beds, etc., with bichlorid of mercury tape, but extreme care should be taken in using this poison. Placing the legs of articles of furniture in saucers filled with moth balls or coal oil is a simple and efficient barrier. Trees, beehive stands, and other outdoor objects may be isolated with the sticky substance used on fly paper but made thinner than usual. If 5 per cent of carbolized oil be added, the durability of the bands will be considerably increased.

Ant poisons.—Strong antimony or arsenical sirups, a number of which are sold by druggists in infested territory, are used to keep the ants from buildings. They give quick relief for short periods, but are not a factor in the reduction of the infestation. The only effective poisons yet known for permanent control are poisoned sirups. An arsenical sirup is recommended in the bulletin which will not spoil and which is superior to any other formula yet tested on account of its stability at high temperatures, freedom from crystallization, and continued attractiveness.

Trapping ants.—Ants may be trapped by providing boxes of decaying vegetation in in the winter. The colonies will move into these boxes and the ants may then be killed with carbon bisulphid.

VALUES OF DAIRY COWS.

Highest Value When Six Years Old, According to Estimates of Dairymen.

According to estimates made by more than 1,800 dairymen and breeders, the diary cow reaches her highest value when between 5 and 6 years of age. These estimates have been used as the basis of a study on the influence of age on the value of dairy cows, just published as Department Bulletin No. 413, by J. C. McDowell. The figures were obtained from well-informed farmers throughout the principal dairy districts of the country, and the average may be taken as fairly representative of relative values of cows at different ages.

Estimates were obtained for 4 of the leading dairy breeds (Holstein, Guernsey, Jersey, and Ayrshire) and for 4 classes of 3-year-olds of each breed, namely, the $80 grade cow, the $100 grade, the $200 pure bred, and the $300 pure bred. Working from this series of arbitrary values, estimates covering values from birth to 14 years of age were obtained. For example, it was found that the farmers estimated that a grade Holstein worth $80 at 3 years of age was worth $10 at birth, $101 at 6 years of age, and $46 at 14. In the case of the pure breds the estimated advance in value up to 5 or 6 years of age is relatively sharper and the decline thereafter correspondingly abrupt. Thus the $300 pure-bred Jersey is estimated to be worth $59 at birth, $351 at 6 years, and but $74 at 14.

The accompanying table summarizes the results of this study, showing the estimated rise and fall in values for the different breeds and grades in percentage of maximum value. It is believed that within certain limits this table will be of use to the average dairyman in determining roughly the values of classes of cows other than those specified. Thus the per cent column for the cow worth $80 at 3 years of age should be approximately correct for the one worth $70 at that age; likewise the figures for the cow worth $100 at 3 years should hold for the one worth $110 at that age. On the other hand, however, the figures for the $300 pure bred would not be applicable to the cow worth $600 or more at 3 years of age.

Influence of age on values of dairy cows, shown in per cent of maximum value.

[Averages of 1,844 estimates.]

GRADE COWS WORTH $80 AT 3 YEARS OF AGE.

Age.	Holstein.	Guernsey.	Jersey.	Ayrshire.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Birth	10	11	11	9
6 months	24	24	24	20
1 year	33	40	38	36
2 years	60	62	62	57
3 years	78	81	87	81
4 years	89	92	94	88
5 years	98	100	98	96
6 years	100	100	100	100
7 years	97	97	98	99
8 years	91	91	94	95
9 years	82	83	82	90
10 years	74	74	77	79
11 years	66	65	66	71
12 years	59	56	56	62
13 years	51	48	47	52
14 years	43	42	39	45
Estimates.	107	101	144	137

GRADE COWS WORTH $100 AT 3 YEARS OF AGE.

	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Birth	9	10	10	10
6 months	21	21	21	21
1 year	36	35	36	35
2 years	59	57	60	59
3 years	82	79	83	81
4 years	92	92	92	90
5 years	98	99	98	97
6 years	100	100	100	100
7 years	95	95	98	98
8 years	88	87	93	94
9 years	78	76	84	86
10 years	68	67	74	77
11 years	59	56	64	67
12 years	51	48	53	59
13 years	47	39	43	50
14 years	39	32	34	41
Estimates.	159	103	134	141

PURE-BRED COWS WORTH $200 AT 3 YEARS OF AGE.

	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Birth	24	22	18	17
6 months	34	33	27	27
1 year	46	45	41	39
2 years	62	63	61	57
3 years	78	78	80	76
4 years	91	90	91	88
5 years	98	98	98	97
6 years	100	100	100	100
7 years	96	96	96	98
8 years	89	89	90	93
9 years	80	79	79	85
10 years	69	70	68	75
11 years	59	59	55	63
12 years	50	49	45	51
13 years	41	39	35	39
14 years	32	30	26	30
Estimates.	114	70	137	79

PURE-BRED COWS WORTH $300 AT 3 YEARS OF AGE.

	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Birth	26	23	17	18
6 months	36	34	25	27
1 year	48	48	38	38
2 years	66	67	59	58
3 years	86	86	85	82
4 years	94	95	94	91
5 years	99	100	99	97
6 years	100	99	100	100
7 years	95	95	94	97
8 years	87	88	87	91
9 years	76	78	76	81
10 years	64	67	63	68
11 years	55	57	51	57
12 years	45	47	40	46
13 years	35	37	30	35
14 years	27	28	21	24
Estimates.	148	115	96	59

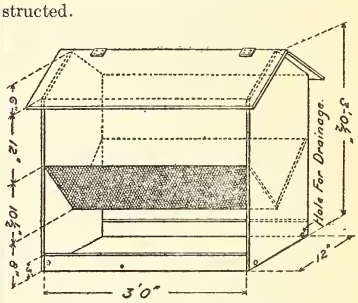
DRY-MASH FEEDER.

Poultry on Range Should Have Access to Supplemental Dry Feed—Device for Preventing Waste.

The feeding of dry mash to farm poultry on range is not practiced as generally as it should be. Dry mash is compounded of finely ground grains, and usually contains some animal protein in the way of beef scrap, fish scrap, etc. This dry mash is intended to supplement the grain ration and to be an additional source of supply to the chickens on range.

Dry mash always accessible to poultry helps to promote a rapid and uniform growth and is economical. Poultry is not inclined to overeat of dry mash. The usual method of feeding wet or moist mashes, however, unless care is taken, is wasteful and dangerous. Poultry will overeat of wet mash, and this mash spoils quickly if not consumed, particularly in hot weather.

The feeding of dry mash, on the other hand, also may be wasteful if a properly designed device for feeding is not employed. The following device is an efficient and economical feeder and may easily be constructed.



Detail drawing of dry-mash hopper.

This hopper is constructed of inch boards 12 inches wide. The top may be hinged for convenience in filling, or the entire top may be made removable, affording in this case better protection from the weather. The V-shaped bottom of the food container is made of one-fourth inch square-mesh wire, such as is used in rendering corn cribs and grain bins rat proof. The flat tray, above which the food container is supported by the end boards, should have drainage holes. Wooden cleats should be fastened along the point of contact of the wire mesh with the end boards, thus making a closed joint and preventing waste.

A substantial advantage in this form of food hopper will be found in that it gives no opportunities for the wedging in and smothering of young chickens, when crowding around the feeder.

HOME-CURED MEAT.

How to Preserve Beef and Pork on the Farm—Satisfactory Method for General Use.

Curing meats with brine is a good method for farm use. It is less trouble to pack the meat in a barrel and pour brine over it than to go over it three or four times and rub in salt, as in the dry-curing method. The brine also protects the meat from insects and vermin. Brine made of pure water and according to the directions in the following recipes should keep a reasonable length of time. During warm weather, however, brine should be watched closely, and if it becomes "ropy," like sirup, it should be boiled or new brine made. A cool, moist cellar is the best place for brine curing.

Pure water, salt, sugar or molasses, and saltpeter are all the ingredients needed for the ordinary curing of meat. The meat may be packed in large earthen jars or a clean hardwood barrel. The barrel or jar may be used repeatedly unless meat has spoiled in it. It should be scalded thoroughly, however, each time before fresh meat is packed.

Curing should begin as soon as the meat is cooled and while it is still fresh. Ordinarily 24 to 36 hours after slaughter are sufficient for cooling. Frozen meat should not be salted, as the frost prevents proper penetration of the salt and uneven curing results.

Recipes for Curing.

Corned beef.—The pieces commonly used for corning are the plate, rump, cross ribs, and brisket, or, in other words, the cheaper cuts of meat. The loin, ribs, and other fancy cuts are more often used fresh. The pieces for corning should be cut into convenient-sized joints, say, 5 or 6 inches square. It should be the aim to cut them all about the same thickness so that they will make an even layer in the barrel.

Meat from fat animals makes choicer corned beef that from poor animals. When the meat is cooled thoroughly it should be corned as soon as possible, as any decay in the meat is likely to spoil the brine during the corning process. Under no circumstances should the meat be brined while it is frozen. Weigh out the meat and allow 8 pounds of salt to each 100 pounds; sprinkle a layer of salt one-quarter of an inch in depth over the bottom of the barrel; pack in as closely as possible the cuts of meat, making a layer 5 or 6 inches in thickness; then put on a layer of salt, following that with another layer of meat; repeat until the meat and salt have all been packed in the barrel, care being used to reserve salt enough for a good layer over the top. After the package has stood overnight add, for every 100 pounds of meat, 4 pounds of sugar, and 4 ounces of saltpeter dissolved in a gallon of tepid water. Three gallons more of water should be sufficient to cover this quantity. In case more or less than 100 pounds of meat is to be corned, make the brine in the proportion given. A loose board cover, weighted down with a heavy stone or piece of iron, should be put on the meat to keep all of it under the brine. In case any should project, rust would start and the brine would spoil in a short time.

It is not necessary to boil the brine except in warm weather. If the meat has been corned during the winter and must be kept into the summer season, it would be well to watch the brine closely during the spring, as it is more likely to spoil at that time than at any other season. If the brine appears to be ropy or does not drip freely from the finger when immersed and lifted it should be turned off and new brine added after carefully washing the meat. The sugar or molasses in the brine has a tendency to ferment, and, unless the brine is kept in a cool place, there is sometimes trouble from this source. The meat should be kept in the brine 28 to 40 days to secure thorough corning.

Dried beef.—The round commonly is used for dried beef, the inside of the thigh being considered the choicest piece, as it is slightly more tender than the outside of the round. The round should be cut lengthwise of the grain of the meat in preparing for dried beef, so that the muscle fibers may be cut crosswise when the dried beef is sliced for table use. A tight jar or cask is necessary for curing. The process is as follows: To each 100 pounds of meat weigh out 5 pounds of salt, 3 pounds of granulated sugar, and 2 ounces of saltpeter; mix thoroughly together. Rub the meat on all surfaces with a third of the mixture and pack it in the jar as tightly as possible. Allow it to remain three days, when it should be removed and rubbed again with another third of the mixture. In repacking, put at the bottom the pieces that were on top the first time. Let stand for three days, when they should be removed and rubbed with the remaining third of the mixture and allowed to stand for three days more. The meat is then ready to be removed from the pickle. The liquid forming in the jars should not be removed, but the meat should be repacked in the liquid each time. After being removed from the pickle the meat should be smoked and hung in a dry attic or near the kitchen fire where the water will evaporate from it. It may be used at any time after smoking, although the longer it hangs in the dry atmosphere the drier it will get. The drier the climate, in general, the more easily meats can be dried. In arid regions good dried meat can be made by exposing it fresh to the air, with protection from flies.

Plain salt pork.—Rub each piece of meat with fine common salt and pack closely in a barrel. Let stand overnight. The next day weigh out 10 pounds of salt and 2 ounces of saltpeter to each 100 pounds of meat and dissolve in 4 gallons of boiling water. Pour this brine over the meat when cold, cover and weight down to keep it under the brine. Meat will pack best if cut into pieces about 6 inches square. The pork should be kept in the brine till used.

Sugar-cured hams and bacon.—When the meat is cooled, rub each piece with salt and allow it to drain overnight. Then pack it in a barrel with the hams and shoulders in the bottom, using the strips of bacon to fill in between or to put on top. Weigh out for each 100 pounds of meat 8 pounds of salt, 2 pounds of brown sugar, and 2 ounces of saltpeter. Dissolve all in 4 gallons of water, and cover the meat with the brine. For summer use it will be safest to boil the brine before using. In that case it should be cooled thoroughly before it is used. For winter curing it is not necessary to boil the brine. Bacon strips should remain in this brine four to six weeks; hams six to eight weeks. This is a standard recipe and has given the best of satisfaction. Hams and bacon cured in the spring will keep right through the summer after they are smoked. The meat will be sweet and palatable if smoked properly, and the flavor will be good.

MARKETING PROBLEMS.

(*Continued from page 2.*)

investigational machinery and its plan of action as it proceeds. The office is pursuing its work with the recognition that analyses of marketing processes, recommendations as to their most advantageous use, and suggestions as to improvements can be valuable only after patient and careful research and observation produce data sufficient to permit a clear understanding of all sides of the complicated problems. As a result of the hearty cooperation which has been given by farmers, shipping associations, and distributors, the office already has accomplished important results in some of the lines of work. These will be treated in detail in subsequent numbers of the News Letter.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., SEPTEMBER 27, 1916. No. 8

SHORT-TIME LOANS.

Size of Loan and Purpose for Which Employed Have Direct Bearing upon Rate of Interest Charged.

Every farmer before borrowing money should ask himself certain questions, according to Bulletin No. 409, Factors Affecting Interest Rates and Other Charges on Short-Time Farm Loans, recently published by the department. Very often the farmer who does not ask himself these questions may find that the banker will require answers before he makes the loan.

"As the importance of promoting and encouraging improved systems of farming becomes increasingly apparent," to quote the bulletin, "attention will be directed more and more toward such questions as the purpose and size of farm loans. How are the proceeds of a proposed loan to be employed? Are they to be expended for a productive purpose, such as would lead to improvement in the farming business? Is the size of the loan well adapted to the purpose in view? Does the period for which the loan is to run conform to the time the capital is actually needed? All of these questions have a direct bearing on the costs of short-time farm loans.

Purpose of the Loan.

"The use of any given loan ought to yield a return sufficient at least to repay both interest and principal. If the returns are not sufficient for this purpose, then the money should not be borrowed. The only way in which the use of credit can be directed so as to serve the interests of improved agriculture is to control the extension of loans so that they may be used for productive purposes only. This means, at the same time, a safer use of credit.

"In some localities banks offer loans to farmers at reduced rates of interest when the money borrowed is used for some specific and approved purpose, such as the purchase of live stock, the building of silos, or the making of other improvements which will make farming more profitable under the given conditions.

Size of the Loan.

"The banker usually charges a higher rate of interest on a small loan than on a large one. The clerical and bookkeeping expenses are the same in both cases. Unless a higher rate were charged on small loans, the point would be reached where the expenses connected with such loans would be greater than the interest. On the other hand, it pays the banker to handle large loans at a lower rate of interest.

"The importance of restricting loans to those for approved productive purposes and of having the size of the loan conform to the requirements of sound farm investment has been recognized by some bankers to such an extent that they employ advisers who discuss such questions with their farmer patrons in order to promote the interests of their farm-loan business. This plan has been followed by banks in the Central West, in New England, and in the South. The plan of one of the southern banks may be taken as an example. The agricultural adviser employed by this bank, after a conference with the prospective borrower, decides whether the proposed loan is businesslike and expedient. If the purpose of the loan meets with his approval he works out a plan of procedure with the farmer. The farmer may consider that he needs a loan of $1,000. As a result of his conference with the adviser it may be found that $700 is sufficient. They discuss the safety of the proposed investment, the additional equipment necessary, and, in case live stock is to be purchased, the crop rotation that will furnish the most economical supply of feed. These items are all arranged and agreed upon before the bank makes the loan. After the loan has been made and the capital invested it is the duty of the adviser to visit the farm from time to time to see if the plan adopted is adhered to and if the investment is yielding proper results. Such a plan means added protection to both the farmer and the banker."

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

FEED BALANCED RATION.

Profitable Feeding of Dairy Cows Consists of Supplementing Roughages with Proper Grain Mixtures.

The feeding of a dairy cow should be governed by the cow's capacity to produce milk. By keeping a daily record of each cow's production the skillful feeder soon finds that some cows in the herd respond to an increased allowance of feed and return a good profit on it, while others are limited in milk capacity and overfeeding them is unprofitable. Profitable feeding requires a thorough knowledge of the individual cows as well as of the values of feeds.

The following general rules are given in a new Farmers' Bulletin of the department, No. 743, The Feeding of Dairy Cows, as a guide for winter feeding by the inexperienced feeder:

1. Under most circumstances the cow should be fed all the roughage that she will eat up clean, adjusting the grain ration to the milk production. Only when the cow tends to become overfat should the quantity of roughage be restricted.

2. A grain mixture should be fed in the proportion of 1 pound to each 3 pints or pounds of milk produced daily by the cow, except in the case of a cow producing a flow of 40 pounds or more, when the ration can be 1 pound to each 3½ or 4 pounds of milk. An even better rule is 1 pound of grain each day for every pound of butter fat produced by the cow during the week.

3. Feed all the cow will respond to in milk production. When she begins to put on flesh cut down the grain.

For the most profitable milk production, the cow must be fed a balanced ration at the cheapest price such ration can be provided. By balanced ration is meant the combination of such a proportion of nutrients and in such quantities as the cow requires to maintain her bodily functions and as she can utilize in the production of milk. These nutrients are classified as protein, carbohydrates, and fats. Protein is one of the principal constituents of milk; fats and carbohydrates perform much the same functions, that is, produce energy and heat, and in the balancing of a ration are usually classed together. If the cow is given a ration containing an excess of either element, the excess is liable to be wasted; hence the economical importance of a balanced ration.

Corn silage, corn stover, timothy hay, millet hay, prairie hay, hays from the common grasses, straws of the various cereals, and cottonseed hulls may all be classed as low in protein content, while legume hays, such as alfalfa, the clovers, cowpeas, soy beans, and oat and pea, are classed as roughage high in protein. Grain and concentrated feeds are the chief sources of protein, and the mixture should be made to fit the class in which the roughage belongs.

Compounding a Grain Mixture.

A few simple rules for making up a grain mixture are given briefly below:

1. Make up the mixture to fit the roughage available. With roughage entirely of the low-protein class the grain should contain approximately from 18 to 22 per cent of protein, while with exclusively high-protein roughage the grain ration need contain only about 13 to 16 per cent.

2. Select grains that will furnish the various constituents, especially protein, at the least cost, using home-grown grains if possible.

3. Be sure that the mixture is light and bulky.

4. The mixture should be palatable.

5. See that the grain has the proper physiological effect upon the cow.

All these suggestions should be kept in mind in order to obtain the best possible combination of grains. The following table shows the digestible protein content of the more common grains and by-products feeds. The percentage columns are arranged in 5 per cent divisions.

Approximate digestible protein content of various grains and by-products.

Average, 5 per cent (2.5 to 7.4 per cent).	Average, 10 per cent (7.5 to 12.4 per cent).
Corn meal. Corn-and-cob meal. Hominy feed. Dried beet pulp.	Wheat, ground. Oats, ground. Barley, ground. Rye, ground. Buckwheat, ground. Sorghum grains, ground.
Average, 15 per cent (12.5 to 17.4 per cent).	**Average, 20 per cent (17.5 to 22.4 per cent).**
Wheat bran. Wheat middlings. Dried distillers' grains (rye).	Gluten feed. Malt sprouts. Dried brewers' grains. Dried distillers' grains (corn). Coconut meal. Peanut meal with hulls. Cowpeas.
Average, 25 per cent (22.5 to 27.4 per cent).	**Average, 30 per cent (27.5 to 32.4 per cent).**
Buckwheat middlings.	Gluten meal. Linseed meal (both processes). Soy beans.
Average, 35 per cent (32.5 to 37.4 per cent).	**Average, 40 per cent (37.5 to 42.4 per cent).**
Cottonseed meal.	Peanut meal (hulled nuts).

The percentage of protein in a grain mixture may be found as follows: Take any number of parts of any number of feeds in the table, and for each part put down the percentage of the column in which it is found. Add these numbers and divide the sum by the number of parts.

Examples.

1 part wheat bran	15
1 part cottonseed meal	35
1 part gluten feed	20
3	3)70
	Per cent protein, 23.3

3 parts wheat bran (3×15)	45
2 parts cottonseed meal (2×35)	70
1 part gluten feed (1×20)	20
6	6)135
	Per cent protein, 22.5

The approximate price of a ration per pound of protein may be ascertained as follows: Divide the total price of the mixture by the average protein content as derived above. The mixture costing the smallest price per pound of protein, other things being equal, is the most economical. Unfortunately, other things are never exactly equal, for the physiological effect of the grain, bulk, and palatability must also be taken into consideration. Practically all the grain feeds low in protein are rich in carbohydrates, but grains are used primarily for their protein content, as almost invariably the carbohydrates can be produced more cheaply in the form of corn silage, cornstalks, etc. While the above-mentioned method of testing the economy of a grain ration is not entirely accurate, it is usually a safe method to follow.

TREES ON PASTURE.

Perhaps one of the greatest sources of loss of fertility from pasture soils results from the poor location of shade trees and brush, according to the author of The Grazing Industry of the Bluegrass Region, a bulletin recently published by the department. Trees and brush, he states, should always be set on the higher portions of the field and not along the banks of running streams, as so often is the case. With good grass, the animals do not graze more than one-third of the time; the rest of the time is spent lying down or standing in the shade fighting flies. Hence much of the manure that is made does not get back directly on the land that produced the grass. If the manure produced while the animals are not grazing is deposited on the tops of the hills, its beneficial effects on the grass may be noted for several rods down the hillsides. It is easy to believe that if one-half to two-thirds of the manure is lost from pasture fields and none is added, the crops must gradually deteriorate.

PRIZE WINNERS IN 1915.

Successful Competitors in Work of Boys' and Girls' Agricultural Clubs During Past Year.

The development throughout the United States of the juvenile agricultural club work fostered by the Department of Agriculture in cooperation with the State agricultural colleges is indicated by the list of club prize winners for 1915 recently made public by the States Relations Service. Agricultural clubs for boys and girls were first organized under department auspices in the South in 1907, and in the North and West in 1912. The club work in the 15 Southern States is under the supervision of the Office of Extension Work, South, while that in the 33 Northern and Western States is under the supervision of the Office of Extension Work, North and West.

Club Work in the South.

The enrollment in the South at the time the last season's contests were held included approximately 63,000 boys and more than 42,000 girls. Corn clubs among the boys and canning clubs among the girls are in operation in all of the 15 Southern States. Pig clubs are next in popularity, and are organized in all of the Southern States.

THREE CROPS ON TWO ACRES.

After a boy has learned the fundamental principles of growing corn he is urged to grow three crops on 2 acres. Three-crop clubs have been organized in Georgia and North Carolina. On one acre corn is grown, on a second acre oats or other small grains, followed by cowpeas.

FOUR CROPS ON THREE ACRES.

Four-crop clubs are a recent addition to the extension activities and, because they promote operations by the juvenile farmers more nearly on a commercial and scientific farming basis, are considered by the department's specialists to be of more than usual importance. Members of these clubs cultivate 3 acres instead of 1, as in the corn-club work, and are thus enabled to carry on practical rotations with corn, cotton, small grains, and legumes, turning the latter under as green manure for soil improvement. At present four-crop clubs have reached complete organization only in Alabama and Georgia, but it is expected that they will be extended shortly to many of the other Southern States.

OTHER CLUBS.

Peanut clubs are organized only in Arkansas, Oklahoma, Texas, and Virginia.

They have been started to interest the young farmers in a crop which will be useful in rotations while furnishing products of value for both human consumption and stock feeding. Baby-beef clubs have so far been organized only in Texas, Mississippi, Oklahoma, and Virginia, but it is believed that they will spread to the other Southern States.

Grain-sorghum clubs were originated primarily for parts of the South in which corn can not be successfully grown, and at present are confined to Texas and Oklahoma. In these sections the clubs have grown rapidly.

Cotton clubs have been introduced in some sections to meet local requests. Since cotton is the dominant crop of the South, however, and one of the chief needs of this section has been for diversification, emphasis has not been placed on the club work with cotton.

Potato clubs have been organized in the northern tier of the Southern States—Kentucky, Maryland, Virginia, and West Virginia. The unit area for cultivation in these clubs is one-eighth of an acre. In the table which follows, however, the yields have been raised to an acre basis.

In arriving at the profits for the southern clubs devoted to the raising of a specific crop, the value per bushel is taken as $1 for corn, peanuts, kafir, and potatoes. The value of cotton is taken as 4 cents per pound of seed cotton. In computing the cost of production, rental of land is charged at $5 per acre, or $1 for one-eighth acre, a two-horse load of barnyard manure at $2, commercial fertilizer at actual cost, labor at 10 cents per hour, and the labor of horses at 5 cents per hour.

RECORDS IN THE SOUTH.

The names of the club members making the best results in the Southern States, together with their addresses and details of their accomplishments, are as follows:

State records in 1915.

CORN CLUBS.

State and name and address of club member.	Yield per acre (bushels).	Cost per bushel.
Alabama:		
Junius Hill, Attalla	174.34	$0.20
Elmer Kuhn, Foley	125.50	.09
Arkansas:		
Fay Williams, Fort Smith	116.00	.17
Earl Best, Dota	117.00	.335
Florida:		
Fred Evers, Alfalfa	99.36	.15
Earl Davis, Plant City	94.40	.12
Georgia:		
Joseph Freeman, La Grange	170.33	.14
Ellsworth Watkins, Jackson	166.69	.176
Kentucky:		
Roy Steele, Crestwood	155.83	.145
Theodore Cummins, Butler	138.00	.137
Louisiana:		
Edwards Grimes, Pride	127.73	.171
Elry B. McGuffee, Aimwell	124.95	.207
Maryland:		
Wm. Troy, Centerville	105.50	.199
James Cosden, Longwoods	102.00	.356
Mississippi:		
Emmet Brantley, Ethel	177.04	.19
Covert Meeks, Union	141.00	.205

CORN CLUBS—Continued.

State and name and address of club member.	Yield per acre (bushels).	Cost per bushel.
North Carolina:		
Ledford Hall, Salisbury	141.40	$0.112
Earl Smart, Macon	132.00	.184
Oklahoma:		
Elston Coleman, Newkirk	110.00	.19
Orion Stuteville, Alfalfa	111.00	.24
South Carolina:		
Cary McKinzie, Hamer	164.42	.09
Boykin McCaskill, Camden	121.00	.164
Tennessee:		
Haywood Williams, Newbern	119.00	.10
George Keller, Afton	112.90	.148
Texas:		
Wilburn Furrh, Wills Point	80.50	.12
Sam Villiva, Beaumont	83.25	.18
Virginia:		
Marius Melgram, Hickory, R. D.	209.00	.11
G. E. Shepherd, Lorton	145.00	.13
West Virginia:		
Walter Matthews, Roanoke, R. D. 1	133.00	.17
Russell Haught, Wana	120.00	.12
Audra Six, Garrison	125.80	.163

PEANUT CLUBS.

State and name and address of club member.	Yield (bushels).	Hay (pounds).	Cost per bushel.
Arkansas:			
Albert Coleman, Pocahontas	222.0	4,000	$0.15
Daniel Grimmet, Biggers	140.0	4,000	.19
Nelson Crum, Humphrey	116.5	4,275	.198
Oklahoma:			
May Hayes, Luther	99.0	.....	.17
Field Soule, Beggs	77.0	.....	.77
Ray Crume, Okmulgee	73.0	.....	.24
Texas:			
Clavin Brooks, Paducah	160.0	.....	.84
Velma Beason, Beckville	152.0	.....	.10
Jesse Grantham, Salesville	135.0	.....	.20
Virginia:			
Franklin Edwards, Isle of Wight	165.0	.....	.42
Warden Hearn, Smithfield	116.0	.....	.25
Clifton F. Robinson, Windsor	104.0	.....	.24

GRAIN-SORGHUM CLUBS.

State and name and address of club member.	Yield (bushels).	Cost.
Oklahoma:		
E. L. Colbert, Tishomingo	94.0	$0.150
Conrad Oliphant, Chandler	90.0	.180
Wm. Thompson, Gabriel	89.0	.190
Texas:		
Lee Denson, Nolan	93.1	.090
Crutch Scott, Sweetwater	80.1	.100
Goldie Detwilder, Paducah	71.4	.124

POTATO CLUBS.

State and name and address of club member.	Yield [1] (bushels).	Cost.
Kentucky:		
Ed. J. Hortmann, Beuchel	266	$0.15
Henry Reuling, St. Matthews	250	.16
Alfred I. Hartmann, Beuchel	215	.33
Maryland:		
Owen D. Twining, Princess Anne	272	.235
J. Milton Leake, Princess Anne	264	.333
Randolph Nock, Stockton	198.5	.201
Virginia:		
Dewey Wheatley, Wise	304	.66
Roxie Webster, Jetersville	240	.44
Harrold Dorton, East Stone Gap	224	.16
West Virginia:		
Cecil Groves, Poe	504	.....
J. Van Roop, Parkersburg, R. D. 4	472	.1912
Ralph Templeton, Milton, R. D. 3	424	.1516

[1] Actual operations on one-eighth acre. Yield raised to acre basis.

COTTON CLUBS.

State and name and address of club member.	Yield per acre (pounds).
Oklahoma:	
James Autin, Stonewall	2,801.5
George Lyree, Wilburton	2,428.0
Beryl Robinson, Ada	2,290.0
Texas:	
Whit Brand, Sweetwater	2,160.0
Morris Hays, Kirkland	1,902.0
Porter Hays, Kirkland	1,902.0

PIG CLUBS.

Georgia:
- Julian Hill, Macon.
- Alva Saunders, Donalsonville.

Kentucky:
- Gordon Nelson, jr., Hopkinsville.
- Ernest Minner, Marion.
- Wilson Ogden, Marion.

Louisiana:
- John Robert Reid, Talulah.
- Charles Williamson, Simpson.

Mississippi:
- Hilrie Simpson, Camden.
- Leroy Weeks, Sallis.
- Eugene Middleton, Pocahontas.

North Carolina:
- Miss Rachel Speas, Winston-Salem.
- Willie B. Echols, Kernersville.
- Sam Paul Jones Yow, Greensboro.

Oklahoma:
- James Franks, Hennessey.
- Clyde Ingram, Howless.
- Lewis Fox, Bee.

Virginia:
- James Royster, Church Road.
- Leonard Sidivy, Church Road.
- Allen Rogers, Wilson.

West Virginia:
- Park Kendall, Gazil.
- Lloyd Galford, Crawford.
- Paul Chapman, Wellsburg.

Arkansas:
- Bowling Swift, Ursula.
- Roy H. Hall, Elm Springs.
- Letha Weathersby, Paragould.

FOUR-CROP CLUBS.

State and name and address of club member.	Yield.				Profit on project.
	Cotton (pounds).	Oats (bushels).	Hay (pounds).	Corn (bushels).	
Alabama: [1]					
Curtis Hawkins, Sycamore	4,185	39.0	9,455	72.75	$304.19
Ernest W. Hester, Lamar	2,227	42.0	5,500	110.10	210.73
Clyatt Fincher, Wedowee	2,420	40.0	6,500	87.00	202.47
Georgia:					
Thos. Ball, Newman, R. D. 2	2,936	74.0	3,775	106.00	222.33
Loyd Murphy, Felton	1,530	45.0	7,280	139.00	220.48
Walter Budges, Dawson	2,200	70.5	3,770	111.00	201.85

[1] In Alabama cotton is valued at $0.04 for seed cotton, oats at $0.60 per bushel, hay at $1 per hundred, and corn at $1 per bushel.

BABY-BEEF CLUBS.

State and name and address of club member.	Profit.
Texas:	
Pat Calvert, Brownwood	$36.50
Willie Thornberry, Wichita Falls	33.10
Francis Caldwell, Brownwood	30.60

CANNING CLUBS.

State and name and address of club member.	Yield of tomatoes on one-tenth acre (pounds).	Number of cans, jars, glass, etc., used.	Profit from one-tenth acre.
Alabama:			
Nannie Massie, Choccolocco	2,785	1,446	$128.18
Lorilla Kimbrough, Attalla	1,700	1,350	81.30
Arkansas:			
Willie Hurley, Tuckerman	3,185	1,045	35.91
Winnie Davis, Mist	3,505	403	18.20
Florida:			
Eula Trantham, Jacksonville	3,769	110	83.77
Cora Landrum, Brooksville	2,268	526	38.11
Georgia:			
Jessie Nichols, Rome	5,460	2,184	86.50
Alice Clifton, Macon	4,365	1,752	120.40
Kentucky:			
Olga Chick, Ferguson	3,600	296	121.60
Emma Bruce Cabheart, Harrodsburg	1,260	1,358	224.75
Louisiana:			
Ethel Golson, Calhoun	4,639	1,848	15.19
Tamar Kirkland, Chondrant	3,832	1,700	84.98
Maryland:			
Olga Gertz, Millersville	.....	428	13.90
Maud Higgins, Derwood	.....	235	2.60
Mississippi:			
Louis Mae Traxler, Braxton	5,082	2,023	224.95
Edith Hodges, Blackmonton	3,483	1,680	103.19
North Carolina:			
Letha Haywood, Rockingham	2,000	1,126	183.00
Olive Lockhart, Polkton	1,780	1,241	150.90
Oklahoma:			
Lille Hockaday, Guthrie	1,535	750	95.93
Frances Charvos, Guthrie	2,378	1,042	97.25
South Carolina:			
Clarice Charles, Union	3,288	1,258	60.13
Josephine Driggers, Bennettsville	1,550	807	57.00
Tennessee:			
Attie Mae Clift, Soddy	3,460	1,873	318.16
Louise Brown Harsh, Castalian Springs	840	476	64.55
Texas:			
Willie Haworth, Weatherford	1,438	1,587	242.19
Annie Wolfe, Mineral	2,000	472	78.28
Virginia:			
Virginia Reams, Ford	600	378	98.79
Rosella Foxwell, Grafton	1,440	828	44.57
West Virginia:			
Lillian M. Burgess, St. Albans	3,196	694	81.67
Buena Sale, Parkersburg	1,164	470	78.21

Club Work in the North and West.

In the Northern and Western States, as is shown by the lists, the development of the various phases of the club work has been rapid. The clubs now in operation include those devoted to the production of corn, potatoes, grain sorghums, and miscellaneous field crops; to the raising of poultry, pigs, and sheep; and to such projects as home garden and canning, home canning, home garden, dairy and dairy records, sewing; and housekeeping, cooking, home economics, and bread making. The variety of projects is made necessary to meet the climatic, soil, and cropping conditions of the various sections served. Only a few projects are promoted by the leaders in any one section.

In the tables which follow the large profits secured by some of the corn-club and potato-club champions resulted from the sale of field-selected seed at prevailing prices. Some of the poultry-club members made unusual profits by marketing eggs for hatching and birds for breeding purposes.

In all cases in the Northern and Western States the profits on club projects are computed either on actual sales or on the market price of the products still unsold. In arriving at cost of production, $5 per acre is charged for land rent, except for potato clubs operated on a one-eighth acre basis, the charge in such instances being $1 per plat. Barnyard manure is charged at $2 per load and commercial fertilizer at actual cost. Human and horse labor are charged at 10 cents and 5 cents per hour, respectively.

The total enrollment of boys and girls in the clubs in the Northern and Western States was 209,178. As the garden and canning clubs have a membership of both boys and girls, the separate enrollment does not appear from the general club records. There were nearly 123,000 members of these clubs alone.

RECORDS IN THE NORTH AND WEST.

The names and addresses of the State winners for the North and West, with the statistics showing their achievements, are as follows:

State records in 1915.

CORN CLUBS.

State.	Name and address of club member.	Yield per acre (bushels).	Cost per acre.	Profit per acre.
Connecticut	Ewart Healey, North Woodstock	111.00	$26.80	$162.30
Idaho	Paul Lohrmann, Parma	127.50	15.90	81.10
Indiana	Fred Thomas, Mount Vernon	125.84	11.52	113.48
Iowa	Wade Hauser, Union	150.10	20.00	106.21
Kansas	John Frank Davies, Emporia	94.66	15.05	50.65
Massachusetts	F. Earl Williams, Sunderland	98.00	23.04	64.71
Michigan	Charles Morrice, R. D. 8, St. Johns	73.10	27.31	50.39
Minnesota	Vernon G. Adams, Winnebago	88.60	17.35	101.81
Montana	Ernest Daly, Miles City	35.00	10.10	56.15
Nebraska	Ralph Cox, Homer	107.25	32.61	21.45
Oregon	Leland M. Charley, Brownsboro	87.00	14.56	176.90
Rhode Island	Frank H. Reedy, Thornton	144.00	104.00	44.00
South Dakota	Wilbur G. Odland, Hurley	87.50	15.00	9.25
Vermont	Philip W. Brown, R. D. 1, St. Albans	79.65	45.14	21.63
Washington	Edward B. Starkey, Prosser	97.00	21.00	135.00
Wisconsin	Harry Jaeger, R. D. 6, Janesville	123.20	19.22	96.72

POTATO CLUBS.[1]

Idaho	Russel Wilson, Greenleaf	384.00	$96.80	$175.20
Massachusetts	Isadore Horin, Westminster	458.00	137.40	.....
Michigan	Howard LaFrance, Hersey	420.80	62.90	221.10
Minnesota	Oscar Larson, Viking	605.33	89.12	203.00
Montana	Robert Lienau, R. D. 1, Missoula	520.00	124.80	378.40
Nebraska	Lewis Bickel, Kimball	276.00	70.72	128.00
Rhode Island	Frank H. Reedy, Thornton	124.00	61.00	55.80
South Dakota	Lawrence Stoley, Highmore	375.00	57.25	86.50
Utah	William Bertoch, R. D. 2, Sugar Station	[2] 640.00	[2] 64.40	[2] 194.00
Washington	Gilbert D. Finnigan, R. D. 2, Snohomish	871.00	77.51	314.43
Wyoming	Charles Lambertson, Hudson	640.00	64.00	672.00

GRAIN-SORGHUM AND KAFIR CLUBS.

Arizona	Jose Elario, Phoenix	[3] 61.10	$32.78	$37.22
Kansas	Roy C. David, R. D. 7, Winfield	[3] 65.14	11.68	28.08
New Mexico	Ray R. Hungate, Texico	[3] 98.78	11.20	11.66
South Dakota	Vernon Grant, Wessington Springs	([4])	20.20	59.80

[1] Actual acreage of potatoes varies in the several States from one-eighth to 1 acre. All raised to acre basis for comparison.
[2] Irrigated.
[3] Kafir.
[4] Kaoliang. Cut 36 dozen heads and had 6 shocks from one-fourth acre plat.

HOME GARDEN AND CANNING CLUBS.

State.	Name and address of club member.	Yield per one-tenth acre (pounds).	Cost per one-tenth acre.	Profit per one-tenth acre.
Illinois	Lucile Helphinstine, R. D. 9, Decatur	.....	$12.88	$39.32
Kansas	Ruth McClure, Carlyle	2,000	10.71	72.54
Michigan	Alberta Reagle, Marshall	.....	240.00	192.00
Nebraska	Olga Sieber, Tecumseh	2,867	7.40	65.96
Rhode Island	Joseph Dougherty, East Providence	.....	7.45	58.25
South Dakota	John B. Gilliland, Watertown	1,072	32.00	80.00
Utah	Lorenzo Maxwell, Sugar Station	([1])	[1] 3.03	[1] 5.95
Wyoming	Dorothy Adams, Wheatland	2,185	19.20	128.39
New Jersey	Helen Margerum, Princeton	([2])	33.61	60.23
Montana	Grace Holt, Deer Lodge	.....	40.12	148.62

[1] Had a 3-acre plat. [2] Raised 30 dozen ears of sweet corn and other products.

HOME CANNING CLUBS.

State.	Name and address of club member.	Quarts canned.	Cost.	Profit.
Arizona	Jessie Williams, Thatcher	277	$20.39	$35.01
New Jersey	Mary Leaming, R. D. 1, Trenton	177	28.35	53.27
Rhode Island	Nora Jeffery, Pawtucket	191	18.69	62.68
Utah	Mildred Clark, Farmington		9.00	27.00

POULTRY CLUBS.

There are two main types of poultry-club work, egg and feeding record club, and hatching and rearing club. The different States do not have a uniform basis of contest in the poultry and pig club work, either in time requirement or number of units required.

State.	Name and address of club member.	Days in contest.	Hens.	Eggs received.	Chicks.	Cost.	Profit.
Arizona	Gordon Jones, San Simon	184	6	468		$8.07	$9.03
Connecticut	Raymond Sullivan, Colchester	365	5	1,092		6.47	20.36
Massachusetts	J. Harold Merrick, Wilbraham	100	10	822		5.59	14.96
Oregon	Hazel Burse., Monmouth	181	46	3,463		17.21	35.07
Rhode Island	Daniel Vaughn, Greenville			5,834		150.00	114.21
Washington	Wilfred Morgan, Tacoma	210	20			17.25	23.25
Michigan	Niles Hagelshaw, R. D. 2, Union City	280	185	11,123	420	153.24	97.72
Connecticut	Charles Hubbard, Lime Rock				35	119.65	176.35
Idaho	Anita Scheppers, Richfield				14	10.29	7.71
Kansas	Harry Russell, Scott City				10	1.20	2.02
New Mexico	Donald Toulouse, Albuquerque				32	13.65	23.35
South Dakota	Bernice Cradit, Clark				15	4.25	18.25
Utah	Marion Scofield, Kaysville				16	6.40	21.60
Vermont	John A. Alexander, South Royalton				322	238.50	78.93
Wyoming	Grace Lucile Ellis, Basin				7	2.10	2.10

PIG CLUBS.

The basis for pig-club work varies in different States, as will be noted below:

State.	Name and address of club member.	Days in contest.	Pigs fed.	Pounds gained.	Cost.	Profit.
Arizona	Lawrence N. Smith, Snowflake	228	2	255.00	$24.48	$10.02
Idaho	George Bullock, Rupert	150	[1] 9		38.41	54.35
Indiana	Gordon Wills Reap, Elizabethtown	90	1	145.00	[2] 4.01	46.00
Iowa	Earl Blair, Dayton	120	2	470.00	22.83	12.89
Kansas	Victor C. Hurt, Americus		1		6.22	11.66
Massachusetts	Willard J. Duckler, Pittsfield	120	2	421.00	28.09	150.00
Minnesota	Harold Bemis, Long Prairie	139	2	192.00	7.50	9.41
Nebraska	Walter Briggs, Seward	142	2	436.00	[3] 12.65	138.57
New Mexico	Lloyd Conn, Artesia	300	1	428.25	[3] 16.75	17.67
North Dakota	Edith Penno, Grafton	193	[1] 12	2,593.00	50.92	104.66
Oregon	Harold Reynolds, Independence		1		10.15	6.19
Do	Warren McGowan		(1)		54.17	23.75
Rhode Island	Fred Kennedy, Moosup Valley	244	2	601.00	35.70	22.34
South Dakota	Ray Smith, Erwin	90	1	200.50	14.88	7.88
Utah	Sidney Cornwall, Mill Creek	183	1	275.00	14.26	31.11
Washington	George Hartman, Prosser	138	1	221.00	5.39	11.69
Wyoming	Clyde Berger, Wheatland	112	1	172.00	13.60	10.95

[1] Sow and litter of pigs. [2] Not including labor. [3] Not including first cost of pigs.

DAIRY AND DAIRY RECORD CLUBS.

In Connecticut the period of time was much greater than that of Indiana, which covered three months.

State.	Name and address of club member.	Number of cows.	Value of products recorded.	Cost of feed and labor.	Net profit shown.
Connecticut	Walter Lynn, Watertown	3	$421.04	$79.25	$351.79
Indiana	Pennina Chasey, Marion	2	40.03	23.44	16.59

SHEEP CLUB.

State.	Name and address of club member.	Days in contest.	Sheep fed.	Cost of production.	Net profit.
Rhode Island	Ralph E. Dexter, Greene	365	(1)	$13.00	$16.00

[1] 1 ewe and 2 lambs.

MISCELLANEOUS FIELD CLUBS.

State.	Name and address of club member.	Kind of club.	Yield per acre.	Cost per acre.	Profit per acre.
Michigan	Martha Pawlowski, Harbor Beach	Bean	[1] 36	$34.77	$91.23
New Mexico	Milburn Miller, French	Wheat	[1] 33	11.02	38.48
Utah	William Holdsworth, Lehi	Sugar beet.	[2] 20.25	50.30	53.04

[1] Bushels. [2] Tons.

HOME GARDEN CLUBS.

State.	Name and address of club member.	Cost per one-tenth acre.	Profit per one-tenth acre.
Kansas	Martha Baird, Jewell.	$25.12	$103.36
Massachusetts	Gust W. Anderson, Brockton.	29.88	

The following constitute the nonprofit-making clubs. Members are organized into groups, keep records, cost of material, observations, experiences, and make reports and write illustrated stories of their experiences in the club work, but no tabulated record with a view to showing profits is required.

SEWING CLUB.

Connecticut: Elma Carter, Clinton.
Kansas: Hattie McKinley, Admire.
Michigan: Lenna Morgan, East Le Roy.
Nebraska: Irene Pegg, Red Cloud.
Oregon: Mae McDonald, Dallas.
Rhode Island: Sarah Clarke, Central Falls.
South Dakota: Nora Nensen, Bruce.
Utah: Esther Swan, Salt Lake City.

HOUSEKEEPING, COOKING, HOME ECONOMICS, AND BREAD CLUBS.

Massachusetts: Effie Cahoon, Harwich.
Michigan: Johanna Held, Grand Rapids.
Minnesota: Charlotte Clifton, Sauk Rapids, Class A contest: Alice Sanders, Marine Mills, Class B contest.
New Mexico: Viola Baker, Springer.
Rhode Island: Marjorie L. Edwards, Hope.
South Dakota: Marie New.
Utah: Carroll Sansom, Murray.

HOW TO SMOKE MEATS.

Directions for Smoking Pickled and Cured Meats on the Farm.

Pickled and cured meats are smoked to aid in their preservation and to give flavor and palatability. The creosote formed by the combustion of the wood closes the pores to some extent, excluding the air, and is objectionable to insects.

House and fuel.—The smokehouse should be 8 or 10 feet high to give the best results, and of a size suited to the amount of meat likely to be smoked, 6 by 8 feet being large enough for ordinary farm use. Ample ventilation should be provided to carry off the warm air in order to prevent overheating the meat. Small openings under the eaves or a chimney in the roof will be sufficient if arranged so as to be easily controlled. A fire pot outside of the house proper with a flue through which the smoke may be conducted to the meat chamber gives the best conditions for smoking. When this can not well be arranged a fire may be built on the floor of the house and the meat shielded by a sheet of metal. Where the meat can be hung 6 or 7 feet above the fire this precaution need not be taken. The construction should be such as to allow the smoke to pass

up freely over the meat and out of the house, though rapid circulation is at the expense of fuel.

Brick or stone houses are best, though the first cost is greater than if they are built of lumber. Large dry-goods boxes and even barrels may be made to serve as smokehouses where only small amounts of meat are to be smoked. The care of meat in such substitutes is so much more difficult and the results so much less satisfactory that a permanent place should be provided if possible.

The best fuel for smoking meats is green hickory or maple wood smothered with sawdust of the same material. Hardwood of any kind is preferable to softwood. Resinous woods should never be used, as they are likely to impart bad flavors to the product. Corncobs are the best substitute for hardwood and may be used if desired. Softwood and corncobs give off large amounts of carbon in burning, and this is deposited on the meat, making it dark in color and rank flavored. Juniper berries and fragrant woods are sometimes added to the fire to flavor the meat.

Filling the house.—Meat that is to be smoked should be removed from the brine two or three days before being put in the smokehouse. If it has been cured in a strong brine, it will be best to soak the pieces in cold water overnight to prevent a crust of salt from forming on the outside when drained. Washing the meat in tepid water and scrubbing clean with a brush is a good practice. The pieces should then be hung up to drain for a day or two. When drained they may be hung in the house. All should be suspended below the ventilators and should hang so that no two pieces come in contact, as this would prevent uniform smoking.

Keeping up the fire.—A slow fire may then be started, warming up the meat gradually. During the winter months in cold climates it is best to keep the fire going continually until the smoking is complete, holding the temperature at about the same point. If the fire is allowed to die down, the meat becomes cold and the smoke does not penetrate readily. This results in heavy smoke on the outside and very little on the inner portions of the meat. During the spring months and in the summer a light fire may be started every second or third day for two weeks, the meat being allowed to hang in the smokehouse until sufficiently colored. When the fire is kept going steadily and an even temperature is maintained, 24 to 36 hours will be required to finish one lot of meat. Smoke will not penetrate frozen meat and it will be necessary to extract all frost from it before filling the house. The house should be kept dark at all times to prevent flies entering. As soon as smoked sufficiently the meat should be cooled by opening the ventilators or doors. When hard and firm it may be canvased or packed away for summer use.

PRESERVING TIMBER.

Preservative Treatment of Woods for Farm Uses Should Receive Careful Consideration.

It is estimated that several billion feet of wood is used on the farms of the United States in positions that expose it to decay. This includes wood used for fence posts, building foundations, windmill frames, shingles, telephone poles, silos, etc. The supply of naturally durable woods for such purposes is rapidly growing less in many portions of the country, and shorter-lived woods must be used in their place. Any reasonably cheap method of increasing the life of such woods will effect enormous savings to the farmers of the country. Several methods applicable to farm use have been tested by the Forest Service of the department in a series of experiments on the preservative treatment of fence posts, poles, and other forms of timber exposed to decay. The result of these experiments, published in Farmers' Bulletin 744, The Preservative Treatment of Farm Timbers, show that when suitable preservative treatment is given the natural resistance of wood to decay can be very much increased.

The action of a successful preservative can be readily understood if it is borne in mind that decay is the result of the action of certain low forms of plant life called fungi. Certain substances in the wood constitute their food. As these are dissolved the wood structure is broken down until it becomes rotten. The prevention of this condition lies in depriving the fungi of any one of their requirements for growth—moisture, air, a favorable temperature, and food. In general, the most effective method is to poison the food supply. This, rather than the exclusion of moisture, is the principle underlying the use of the most successful preservatives.

Of all the various preservatives tested, coal-tar creosote—a brownish-black heavy oil—has given the best results. Satisfactory results may be obtained from any good grade, provided a sufficient amount of preservative is put into the wood and a good penetration is secured. The most thorough method of application that is practicable on the farm is the open-tank process. In this treatment the posts are heated for one or more hours in the preservative oil at a temperature of from 180° to 220° F. They are then quickly transferred to another tank of the creosote oil having a temperature of about 100° F., and are left there for an hour or more. In the hot bath the air and moisture in the wood expand and are partially driven out. When the wood is plunged into the cool oil the air and moisture in it contract and draw the oil into the wood. Except in the case of a few very easily treated woods, there is little absorption of oil by the wood during the hot bath. Instead of a separate tank being used for the cool bath, the heating of the oil in the hot bath may be stopped and the wood and the oil allowed to cool together. This accomplishes the same purpose as the cool bath, but a longer time is required because the hot oil cools very slowly. This method can sometimes be used to advantage by heating for two or three hours early in the morning or in the evening and allowing the posts to cool all day or all night. This will make it possible to carry on the treatment with little interference with the regular work of the farm.

The essential parts of the apparatus for general farm use are one or two tanks (depending upon whether the hot and cold or hot and cooling method is used), a thermometer, and some means of heating. Any tank that can readily be heated will do, provided that it is strong enough to hold the weight of the oil and posts, does not leak, and is deep enough so that the oil does not come within a foot of the top of the tank during the treatment.

Other methods of application suitable for farm use are the cold bath or soaking treatment, in which the wood is treated by soaking for long periods at ordinary temperatures; the dipping process, in which the wood is simply heated in oil at from 200° to 220° F. for from 5 to 15 minutes, or longer; and the brush treatment, or painting, which consists of applying two coats of hot preservative to the wood. Each of these processes has certain advantages, the last method especially possessing the virtues of cheapness and simplicity, but none of them is so thorough or imparts such lasting qualities as the open-tank process.

As a rule, the principal item of cost in this treatment of timber is the preservative, the price of which varies. Near the manufacturing plants creosote can usually be obtained at from 20 to 35 cents per gallon in small lots. In other localities the freight will make the price somewhat higher. About half a gallon is absorbed by an average post 5 or 6 inches in diameter. The cost of applying the preservative depends mainly upon the number of posts to be treated, the cost of apparatus, labor, and fuel, and the number of posts which can be treated per day. The cost of treatment will vary greatly in different localities.

The preservative treatment of farm timbers deserves careful consideration in rural communities. In many cases a small wood-preserving plant could be operated profitably in connection with a threshing outfit, a feed mill, or a sawmill, or several individuals could cooperate in establishing and operating a larger plant.

FEEDING IN MISSISSIPPI.

Value of Cottonseed-Silage Combination for Fattening Steers and Calves—Use of Corn.

The cattle-feeding work which was carried on in Mississippi during the winter of 1915–16 by the department, in cooperation with the Mississippi Experiment Station, was very profitable, and serves to throw additional light on the subject of economical cattle feeding in the South. The results given herewith are indicative of what may be expected, but should not be considered conclusive, as they are the results of but one year's work. The experiments will be continued and when completed will be published in bulletin form.

Canton Experiment.

At Canton, Miss., 4 carloads of 3-year-old steers were used in a test comparing the values of various roughages in the rations of fattening steers. The same amount of cottonseed meal was fed to the steers of all lots. The accompanying table shows the rations employed.

Experimental beef cattle feeding work in Mississippi for 1915–16.

	Section 1.—Steer feeding at Canton, Miss. (126 days).				Section 2.—Steer feeding at Abbott, Miss. (141 days).			Section 3.—Fattening calves at Abbott, Miss. (156 days).		
	Lot 1.	Lot 2.	Lot 3.	Lot 4.	Lot 1.	Lot 2.	Lot 3.	Lot 1.	Lot 2.	Lot 3.
Number in lot	20	20	20	20	25	25	25	15	14	15
Average daily ration per head (on full feed):										
Cottonseed meal.....pounds..	[1] 7	[1] 7	[1] 7	[1] 7	7	3.5	3.5	4.73	2	.....
Broken ear corn.....do....	.....	.....	.....	.....	.....	9	.....	.....	.....	.....
Shelled corn.....do....	.....	.....	.....	.....	.....	.....	7	.....	8	11.07
Corn silage.....do....	38.7	38.8	42.7	.....	37	35.8	35.7	23.7	16.4	12.3
Cowpea hay.....do....	.....	.....	.....	7.8	.....	.....	.....	.....	.....	.....
Alfalfa hay.....do....	.....	.....	.....	.....	.....	.....	.....	4	4	4
Straw.....do....	.....	.8	.....	7.8	5	2.0	2.6	.....	.....	.....
Corn stover.....do....	1.25	.....	.....	7.8	.....	.....	.....	.....	.....	.....
Average initial weight per head.do....	787	786	787	787	824	825	826	430	430	433
Average final weight per head..do....	1,036	1,030	1,059	989	1,044	1,059	1,067	700	695	713
Average total gain per head....do....	249	244	272	202	220	234	241	270	265	280
Average daily gain per head...do....	1.97	1.94	2.16	1.60	1.56	1.66	1.70	1.73	1.70	1.79
Average shrinkage per head, en route to market, pounds	93	85	93	88	54	58	64	48	29	35
Average dressing percentage (market weights)	58.6	58.0	58.5	56.2	[2] 58.2	[2] 57.8	[2] 57.3	54.4	56	55.8
Initial cost per 100 pounds	$5.00	$5.00	$5.00	$5.00	$5.50	$5.50	$5.50	$5.00	$5.00	$5.00
Selling price per 100 pounds	$8.45	$8.45	$8.45	$8.20	$8.58	$8.60	$8.60	$8.17	$8.58	$8.66
Average profit per head	$10.78	$11.14	$12.83	$6.51	$15.18	$12.18	$11.48	$10.75	$8.59	$8.79

[1] Both cottonseed meal and cake were fed to these lots.
[2] From warm weights of carcasses.

Lots 1, 2, and 3 received a generous daily feed of corn silage, while lot 4 got no silage and was fed heavily on a mixture of equal parts of cowpea hay, straw, and corn stover, as the roughage portion of the daily ration. Lots 1 and 2 had access to racks containing straw and corn stover, respectively. It will be noted that this tended to cut down the quantity of silage which these steers consumed, but it did not increase the daily gains, nor in this instance lower the cost of gains.

The steers of lot 4, which received in place of silage a heavy allowance of dry roughages, made smaller daily gains, were not as well finished, sold for less per pound, dressed out a lower percentage, and returned less profit than the steers of the other lots.

The steers of lots 1, 2, and 3 made good daily gains, averaging slightly more than 2 pounds per head per day, and made exceedingly satisfactory profits. The profits for the three lots were $10.78, $11.14, and $12.83 per head, respectively. The steers of lot 4 made a profit of $6.51 per head.

The three most significant conclusions which are apparent from the results of this feeding trial are: First, that a ration of cottonseed meal and corn silage is efficient in producing rapid and economical gains on steers of this type; second, that even a large amount of dry roughages fed with cottonseed meal does not produce as rapid or as economical gains as does a ration of cottonseed meal and silage; and, third, the feeding of a small amount of dry roughage with the silage does not seem necessary or especially beneficial.

Results at Abbott.

In the second section of the table is shown the results of the feeding of 3 carloads of steers averaging 3 years of age. In this trial, which was carried on at Abbott, Miss., the roughages for all lots were corn silage and straw, of which each lot was given practically equal quantities. The objects of the test were to determine if a mixture of corn and cottonseed meal would be more profitable than feeding cottonseed meal as the sole concentrate and if broken ear corn was as efficient as shelled corn for feeding with such roughages to fattening steers. Lot 1 had cottonseed meal as the sole concentrate, lots 2 and 3 had half as much cottonseed meal as lot 1, while broken ear corn also was fed to lot 2 and shelled corn to lot 3. Lots 2 and 3, which received corn with the cottonseed meal, made larger daily gains, and were in slightly better condition than lot 1 at the conclusion of the feeding period. However, it will be noted that the steers of lot 1 made the most profit per head. This further points to the economy and efficiency of the cottonseed meal and silage combination, and indicates that while corn and cottonseed meal in the above proportions as fed to lots 2 and 3 is very efficient in finishing steers for the block, it is still less economical than the ration of lot 1 when corn is charged at 70 cents per bushel and cottonseed meal at $27 per ton, as in this case.

Although pigs followed the steers getting corn, the amount of pork produced was not secured. If 1.14 pounds of pork were produced for each bushel of corn fed the steers [1] and pork was worth 8 cents per pound, the pork credit would be $1.60 per steer. Taking this into consideration, the corn fed the steers should be charged at 63 cents per bushel to give the same profit per steer as made by the steers fed cottonseed meal alone. If corn is worth less than 63 cents per bushel on the farm, this test indicates that it would be more profitable to feed a ration composed of part corn than one with cottonseed meal as the sole concentrate. The uniform profits of these 3 carloads of steers speaks for the efficiency of the rations fed.

Calves at Abbott.

The third section of the table gives, in brief, the results secured from feeding three lots of calves at Abbott, Miss. More time is required to fatten young stuff than is necessary to finish older steers.

The concentrate fed each lot was as follows: Lot 1, cottonseed meal; lot 2, cottonseed meal and corn in the proportion of 1 to 4, with a medium allowance of cottonseed meal; lot 3, shelled corn. The roughage fed the calves of all three lots consisted of 4½ pounds of alfalfa hay per head per day and all of the silage they would eat throughout the feeding period.

The gains made by the calves in the three lots were quite uniform, being slightly in favor of lot 3. The calves of lot 3 also were better finished than those of either lot 1 or lot 2 and sold on the market for more per pound. These facts would indicate that corn and silage in the proportions fed is a very efficient combination when it is supplemented with a leguminous hay, as in this instance with alfalfa.

The cottonseed meal and silage combination once more proved most economical, notwithstanding the fact that the calves of lot 1 failed to command the market price which the other calves brought. The prices of feeds, however, were the same as was mentioned above in the steer feeding trial at Abbott. (*Continued on last column, page 8.*)

[1] See Beef Production, H. W. Mumford (Urbana, Ill., 1907, pp. 145–146).

MARKETING TIMBER.

Amount of Profit from Wood-lot Products Depends Largely on Method of Selling.

To secure a fair price for his timber the owner of a wood lot should know how much material he has and for what purposes it is best adapted. The first thing for him to do, therefore, says an article in the new Yearbook of the department, "Pointers on marketing wood-lot products," is to find out how much timber of each kind the wood lot contains, what products it will yield, and what is its general condition and quality. If the wood lot is small, it will be best to measure each tree separately. The diameter should be measured at about 4½ feet above the ground with calipers made for the purpose. Heights should be carefully estimated, or measured with some sort of height instrument, to the first large limbs. When the entire wood lot has been gone over it will be possible to divide the trees into diameter classes; for example, 8 to 12 inches, 12 to 18 inches, and 18 inches and over. As a general rule, trees from 8 to 12 inches in diameter will make ties; those from 12 to 18 inches, poles or piling; and those 18 inches and over, lumber or veneer. Knowing the diameter and height, the amount of timber in board feet in each tree can be found by the use of volume tables, which are included in Farmers' Bulletin 715, Measuring and Marketing Wood-lot Products. The quantity of cordwood a tract will yield can hardly be estimated by an inexperienced person. Sales of such material will usually have to be made on the basis of actual cut.

If the wood lot is large it will, of course, seldom be possible to measure each tree separately. In such cases every tree may be measured on parallel strips 66 feet wide running through the tract. Every 660 feet in length of such strips comprises an acre. Averaging all the acres comprised in the strips and multiplying by the total acreage of the tract gives the total stand. The strips should include at least 10 per cent of the wood lot. Proper allowance must also be made for defective timber. Dead trees, except those killed by fire or other outside agencies, are apt to be very defective and should be culled. When the tract is exceptionally large, it may pay to employ a professional "cruiser" to estimate the timber.

Once a wood-lot owner knows the kind, amount, and quality of his timber, the next step is to find some one who will buy what he has to sell. If the owner depends altogether upon local industries to buy his product, he is likely to find his market extremely limited. Some products, such as crossties and fuel wood, have to be sold locally; it would not pay to transport them far. But other products, among them tanbark, can be shipped 150 miles, and still others, like walnut timber for gunstocks, can be shipped almost any distance.

Railroads are the largest purchasers of crossties. Any station agent will furnish information concerning specifications and the prices paid by his company. Electric railways in cities and towns also use ties, but unless the distance to town is short it will not pay to ship them. Electric interurban lines offer the same opportunity for disposing of ties as do the steam roads. Telegraph and telephone lines are always on the market for poles. Most of them have branch offices in towns and cities where prices and specifications can be obtained. Electric power and electric street railway companies also use poles. Pole specifications usually classify the materials in 5-foot lengths, beginning at 20 feet and running up to 60 feet, with a diameter at the top end of 7 inches in the smallest poles and correspondingly larger diameters for the longer ones. The market for piling is not very extensive, but railroads, large construction firms, and docking companies purchase considerable quantities. Piling timbers, which must be straight and long, bring good prices. Lists of users can be obtained from the Forest Service. Mines are large users of timber, and if the wood lot is in a mining district it would be well to look into this market.

Sawmills, veneer mills, and fruit and vegetable package factories offer a market for the particular kinds and qualities of the woods they handle. These industries buy all their material in log form, and the woodlot owner does not have to engage in any manufacturing operation himself. All he need do is to cut and deliver his timber in the rough at the mill. Veneer logs must be of good quality and size, but selected stock brings a high price.

The Forest Service has prepared bulletins on the wood-using industries of a number of States which tell the uses to which various woods are put and the quantity used annually for each purpose. They also contain directories of wood-using firms arranged according to the products that they manufacture. A list of these bulletins and information as to how to procure them may be had upon application to the Forest Service.

The way in which woodlot products are sold may have a good deal to do with the profit an owner gets from his tract. There are four ways of selling: (1) By scale measurement of rough products; (2) by the piece, for such products as ties and poles; (3) by the boundary, for a lump sum; and (4) by lumber scale of sawed products.

Selling by the log or piece is the simplest method. Ties, poles, piling, etc., are always sold by the piece. The important things to know are the different grades of each product and their relative value. Fire wood, pulp wood, and excelsior wood are sold either by the cord or rick. This, too, is a comparatively simple method of marketing. To be sure of selling profitably by boundary for a lump sum, the owner must make a very careful estimate of the amount and value of his timber.

In the majority of cases the best time to cut timber is in the winter months. Wintercut timber seasons slowly and evenly, and by the time the warm weather comes is thoroughly air-dried. Products which must be peeled, however, such as ties, poles, and tan bark, should be cut in spring, when the bark peels most easily. Veneer logs which must be delivered at the mill in a green condition can be cut in any season of the year, provided they are delivered as soon as cut. This is true also of pulpwood and tannin-extract wood.

The really necessary steps, then, in the profitable marketing of woodlot products are to find out what the woodlot contains and then, through the medium of a list of wood-using industries within shipping distance, to find a purchaser for the various classes of timber on the tract, delivering the material in the forms called for. If the woodlot owner will devote the same thought and care to marketing his timber that he does to marketing other farm crops, he will be more than likely to find that this necessary part of the farm, which now too often brings in no revenue at all, can be put upon a sound paying basis.

FEEDING IN MISSISSIPPI.

(*Continued from page 7.*)

Pigs followed the calves in lots 2 and 3, but the profits from this source are not included in the table. These pork profits would increase the profits per calf in lots 2 and 3 about $2, or enough to make the total actual profits for each of the three lots remarkably uniform.

The economy and efficiency of the cottonseed meal and silage ration, and the evident value of alfalfa hay when fed in connection with nonprotein feeds, are two valuable deductions which can be made from the results of this test. The results also indicate that if corn is worth much less than 70 cents per bushel on the farm it can be used with cottonseed meal very profitably for fattening calves or baby beeves for the market.

W. F. Ward,
Senior Animal Husbandman,
Beef Cattle Investigations.

NEW FARMERS' BULLETINS.

Waste Land and Wasted Land on Farms. (Farmers' Bulletin 745.)

Grains for the Montana Dry Lands. (Farmers' Bulletin 749.)

Peanut Oil. (Farmers' Bulletin 751.)

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., OCTOBER 4, 1916. No. 9

SELECT SEED CORN.

Prepare for a Profitable Crop Next Year—Gather and Carefully Preserve a Supply of Good Seed.

Autumn is the time to prepare for a profitable corn crop the following season. At corn-ripening time drop all other business and select an abundance of seed corn. The process is too important to be conducted incidentally while husking. When selecting seed corn give the process your entire attention. Get the very best that is to be had and preserve it well, and your increased yields will return you more profit than any other work you can do on your farm.

In 13 years' investigations conducted upon Scioto River bottom soil near Piketon, Ohio, with Woodburn White Dent, U. S. Selection 77, the yield was raised from an average of 63 bushels of dry shelled corn from 1901 to 1907 to an average of 75 bushels from 1907 to 1913. The principal influence producing this increase in yield was the selection and the care of seed corn.

The only proper way to select seed corn is from the stalks standing where they grew, as soon as ripe and before the first hard freeze. As soon as the crop ripens go through the field with seed-picking bags and husk the ears from the stalks that have produced the most corn without having any special advantages such as space, moisture, or fertility. Avoid the large ears on stalks standing singly with an unusual amount of space around them. Preference should be given the plants that have produced most heavily in competition with a full stand of less productive plants. In all localities the inherent tendency of the plant to produce heavily of sound, dry, shelled corn is of most importance. Late-maturing plants with ears which are heavy because of an excessive amount of sap should be ignored. Sappiness greatly increases the weight and is likely to destroy the quality. In the Central and Southern States, all other things being equal, short, thick stalks are preferable. Short stalks are not so easily blown down and permit thicker planting. Thick stalks are not so easily broken down, and in general are more productive than slender ones. The tendency for corn to produce suckers is hereditary. Other things being equal, seed should be taken from stalks that have no suckers.

The same day seed corn is gathered the husked ears should be put in a dry place where there is free circulation of air and placed in such a manner that the ears do not touch each other. This is the only safe procedure. Good seed is repeatedly ruined because it is thought to be already dry enough when gathered and that the precaution mentioned above is unnecessary. Many farmers believe that their autumns are so dry that such care is superfluous. Seed corn in every locality gathered at ripening time will be benefited by drying as suggested. If left in the husk long after ripening it may sprout or mildew during warm, wet weather or become infested with weevils. The vitality of seed is often reduced by leaving it in a sack or in a pile for even a day after gathering. During warm weather, with some moisture in the cobs and kernels, the ears heat or mildew in a remarkably short time. The best possible treatment immediately after gathering is to string the ears. Ordinarily the best place to hang strings of ears is in an open shed or loft. Wire racks are more convenient, and in the end cheaper, than binder twine. Such racks may be made from electrically welded lawn fencing. The cutting of the fencing into seed-corn racks is done without any waste.

Only during unusually damp weather at seed-gathering time will fire be necessary. If heat is employed in a poorly ventilated room it will do the seed ears more injury than good. If used, the fire should be slow, long continued, and situated below the seed ears, with good ventilation above them.

After hanging in the shed or lying on the racks for two months the seed ears should be as dry as a bone and contain less than 10 per cent of moisture. They can remain where they dried or be stored in mouse-proof bar-

(*Continued on page 5.*)

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

CITY'S DUTY TO FARMER.

Secretary of Agriculture Urges Business Men to Cooperate in Promoting Rural Prosperity.

David F. Houston, Secretary of Agriculture, delivered the following address on "Agricultural and Commercial Cooperation" before the Association of Commercial Organization Secretaries in Cleveland, Ohio, September 25:

"Your invitation found me in a responsive mood, at the close of an interview in which I had asserted that the next great thing to do for the betterment of agriculture and rural life is effectively to awaken urban communities and business men to a sense of their responsibility toward agriculture and rural life and to enlist their constructive interest and support for their improvement. The thing which concerned me was how to do this—how to reach them and how to touch them. Naturally, your invitation seemed most opportune—made to order, as it were. It immediately occurred to me that there was no other body whose members touch business men more expertly or adroitly or touch more bsuiness men than this.

The Foundation of Industrial Existence.

"Experience has strikingly emphasized in my mind the necessity of enlisting for the betterment of rural life the support of the town, of its commercial organizations, and of its business leaders. Heretofore, agricultural agencies have worked somewhat exclusively with farmers and farmers' organizations. They have not largely worked with or on the business world, and the business world has, relatively speaking, displayed an indifference to the problems of rural life, or at least has not given them the requisite effective study and sympathetic aid. In fact, it may be said that, relatively speaking, there has been neglect of the rural life by the Nation as a whole. We have been so bent on building up great industrial centers, in rivaling other nations of the world in manufacturing, fostering it by every natural and artificial device we could think of, so busy trying to make each city larger by the next census, that we had, in great measure, overlooked the very foundations of our industrial existence. It had been assumed that we had a natural monopoly in agriculture, that it could take care of itself,

62159°—16

and we had, therefore, in many directions cheerfully left it to do so; and recklessness and waste had been incident to our breathless conquest of the continent. We have been too prone to indulge in praise of farm life and in flattery of farmers and too little disposed to take effective steps to lend aid. President Wilson was right when he said: 'It has, singularly enough, come to pass that we have allowed the industry of our farms to lag behind the other activities of the country in its development.' It was high time that there should be a change. Quoting the President again: 'I need not stop to tell you how fundamental to the life of the Nation is the production of its food. Our thoughts may ordinarily be concentrated upon the cities and the hives of industry, upon the cries of the crowded market place and the clangor of the factory, but it is from the quiet interspaces of the open valleys and the free hillsides that we draw the sources of life and of prosperity, from the farm and the ranch, from the forest and the mines. Without these every street would be silent, every office deserted, every factory fallen into disrepair. And yet the farmer does not stand upon the same footing with the forester and the miner in the market of credit. He is the servant of the seasons. Nature determines how long he must wait for his crops, and will not be hurried in her processes. He may give his note, but the season of its maturity depends upon the season when his crop matures; lies at the gates of the market where his products are sold. And the security he gives is of a character not known in the broker's office or as familiarly as it might be on the counter of the banker.'

Shortsighted Attitude of Cities.

"Agriculture is the greatest single line of industry of the Nation. Its annual contribution to the Nation exceeds ten billions of dollars, while the total value added to raw materials by manufacturing does not exceed nine billion, and on at least two occasions the outpouring of products from the farms and their exports have saved the nation's finances. The largest cities in the land are intimately dependent upon agriculture, and vast numbers of cities and towns owe their existence and well-being practically exclusively to it. The amazing thing is that so few recognize this fact, or, if they recognize it, act accordingly. In not a few cases the relation of the town to the surrounding country is one of hostility, and, in many cases, in effect, amazingly selfish. In a few there are indications of a spirit of enlightended selfishness, and, in still fewer, of a wise, constructive, helpful attitude. Illustrations of the truth of these assertions are not far to seek. They are found not only in nonaction on the part of cities, but also in positive resistance to participation in plans and legislation essential for the upbuilding of country districts. They are found in struggles over apportionments of school taxes and road funds and against better sanitary arrangements. They are rooted in the shortsighted attitude of bankers and business men toward not only the needs and programs of the rural population, but also legislative proposals designed to remedy prevailing general conditions. There has been for too long a time in too many localities a nice balancing of benefits and burdens of government, just as there is beginning to appear too nice a balancing of the benefits and burdens in the national field. In both directions such attitudes are as blind and destructive to community and national interests as they are unpatriotic. The town and the country are in the same boat; and what is best for the one is in the long run highly likely to be conducive to the welfare of the other.

"It was my fortune not many months ago to have an opportunity to speak to the chamber of commerce of one of our thriving cities. I had made some study of its problems and progress. I had certain views as to its relations to the surrounding country and the direction of progress. Before speaking, I asked if someone would not tell me what made the city, and the answer came, 'the back country,' and this I knew to be true. I then innocently observed that, of course, as prudent business men, they had taken steps to inform themselves of the needs and problems of the back country, of the best ways to foster a balanced agriculture and to promote its well-being, that their bankers had intelligent views as to the credits which should be extended and for what, that they had taken pains to see that good roads radiated into the country districts, and that they had assisted the farmers in solving their difficult problems of marketing and distribution. I then asked if they would tell me what had been done; and a deep and significant silence pervaded the room. This is one of many experiences and could, I believe, be duplicated in many parts of the Union. That there should be a change or that the change which is beginning to appear should be rapidly made, I am sure you will agree.

Business Men Should Study Agricultural Problems.

"What, then, is to be done? Obviously, first of all, a new attitude must be assumed and a sense of responsibility, even on the basis of enlightened selfishness, must develop. Business men and business organizations must join the other great elements in society and become effective students of agricultural problems and efficient instruments in bettering rural life. The problems are exceedingly numerous and sufficiently difficult to tax the best thought of the best men of the Nation.

"With all the progress made—and the progress has been rapid and vast—there continue to be many interesting and urgent problems of production. There is much to be done for soil improvement, for plant and animal breeding, for the eradication of diseases, for improvement of cultural methods, for better farm management, and for better utilization of labor throughout the year. The Nation is losing hundreds of millions of dollars through diseases which can be controlled or eradicated, and under better conditions the meat supply of the Nation can be greatly increased with reasonable profits to the producers and distributors. That this is essential may be sharply indicated by the mere statement that while in the last 15 years we have gained 24,000,000 of people, the number of our beef animals has decreased 6,000,000, sheep 10,000,000, and hogs have increased only 11,000,000.

The Problem of Distribution.

"Not less important and even more urgent are problems of distribution. It is one thing to produce commodities and another thing to distribute them economically and profitably. There can be little doubt that in this phase of his enterprise the farmer has been at a marked disadvantage. He has been without banking machinery to serve his particular needs as the merchant and manufacturer are served, without established standards for staples for use in market transactions and without systematic knowledge of the markets themselves, without ability to command the requisite transportation facilities, and without the requisite contact with the machinery of distribution. No one can estimate the losses arising because of these defects. Many drawbacks exist because the farmer's operations, as a rule, are on a small scale. The average cultivated farm in the Nation is 75 acres, and in some sections only 35 acres. This points to one conclusion, that cooperation for marketing not only but for production also is essential in the interest of the producer as well as of the consumer.

"But even if each farmer were an efficient producer and community arrangements were developed for efficient marketing, the problems would not have been solved. There is much that individuals and groups of individuals may do in every community. In fact, they must always do the larger part. Self-help will be the rule in the future as it has been in the past. Nevertheless, there are certain undesirable and unjust conditions which no amount of private effort can overcome. Such conditions legislation alone can correct.

Neglect of Rural Economics.

"In the field of production, national and State agencies for a number of years have been rendering effective service, but, to the second half of agriculture involved in dis-

tribution, no systematic attention had been given or provision made up to two and a half or three years ago. Even the economists of the Nation had shown a singular indifference concerning problems in this field. They had been busily studying the economics of industry, banking, transportation, public debts, international payments, corporation finance, economic theory, and the economic systems of the medieval and ancient world. But a mere handful had shown any appreciation of the difficulties which vexed the 6,000,000 farmers of the Nation in spite of their knowledge of their strivings against them. In the minds even of the few there were grave doubts as to the lines that inquiries should follow and as to the possibility of securing results within a reasonable time.

Remedial Legislation.

"But things have moved rapidly. An Office of Markets, to make investigations in all directions, was organized in 1913, was rapidly extended, and to-day posesses a large trained personnel, with a budget of approximately a million dollars. It has accumulated a great mass of valuable information and has extended aid to farmers and communities in many directions, and particularly in the field of the marketing of perishables through a market news service. Certain of the investigations of the office will require time. Many facts must be secured and conclusions reached before effective action can be taken. But certain things needed to be done. It was not necessary to await a long course of inquiry to begin doing them. The present generation needed service. A program was marked out and has been completed, in large measure, by the enactment of singularly carefully framed legislation. The national banking law was so amended as to permit banks to lend money within safe limits on farm mortgages and to recognize the peculiar needs of the farmer by giving his paper a maturity period of six months. The Federal farm-loan act was passed, creating a banking system to reach intimately into the rural districts, to operate on terms suited to the farmer's needs under sympathetic management, to introduce business methods into farm finance, to systematize and to reduce the cost of handling of farm loans, to place upon the market mortgages which will be safe investments for private funds, to attract into agricultural operations a fair share of the capital of the Nation, and to lead to a reduction in interest rates. Then, there were enacted the cotton-futures act, providing standards for cotton, for the supervision of the operations of the exchanges, and for placing the trading in cotton on a sounder basis; the grain-standards act, to establish standards for grain, to remedy certain injustices and undesirable practices; and the warehouse act, providing for licensing bonded warehouses and making possible an easily negotiable warehouse receipt, the better storage of farm products, and the more orderly distribution of farm products. Not less important for farm operations is the Federal-aid road act, excellently conceived to safeguard the expenditure of $160,000,000 arising under the act over the five-year period, and certain to secure better results from the $280,000,000 or the equivalent now annually expended in the Nation for good roads.

"Preceding these measures was the agricultural extension act, one of the most significant educational measures ever adopted by any Government. Its terms you are familiar with. Like the road act, it provides for a very significant thing—for cooperation between expert State and Federal agencies. It undertakes to bring home to the people the best scientific and practical knowledge bearing on production and distribution. It provides for the most effective way of disseminating knowledge, the old way, through personal contact. It will reach its full development in 1922–23, when there will be expended under its terms from State and Federal funds alone $8,680,000 in the direct education of the farmer and his family, and probably from other Federal and State community funds from three to four millions more. With increased local support this will permit the placing in each of the 2,850 rural counties of the Nation two county agents, in most cases a man and a woman, with the assistance of district supervisors, all working with the aid and direction of the great forces of the land-grant colleges and the Department of Agriculture.

What Every Business Man Can Do.

"I have indicated these problems, this legislation, and this machinery for the very simple reason that if you undertake to cooperate in agriculture, you must know what you are cooperating in and for, the conditions under which work must be done, the machinery through which it must be accomplished, and to suggest to you, and through you to business men, that these things must be assiduously studied if efforts are to be effective. Obviously, you must know the problems and the forces if you are to work intelligently. One of the great problems confronting us is how to educate the business man and secure his effective participation. The department and the land-grant colleges are frequently embarrassed by ill-considered and unwise proposals from individuals and business organizations; and not infrequently friction and ill feeling is engendered. The business man is occupied with his immediate concern and no effective plan has been devised for reaching him. The metropolitan press has not yet fully conceived the part it might play in this great field. Agricultural activities are important, but furnish little of the stuff commonly regarded as news, and it is seldom that you find on staffs of city papers men either interested in these matters or possessed of the requisite training to discuss them. Is there not suggested here a high opportunity for the useful direction of your efforts and influence? It is especially essential that the business world should have at least a sympathetic appreciation of the difficulties under which the farmers of the Nation labor and a basis for forming an intelligent judgment on constructive and remedial economic and legislative proposals. One of the discouraging things is the resistance by many business interests, based clearly on ignorance, to greatly needed and sound legislation. I need not suggest that if we are to have Government by public opinion, facts must be presented, be fairly interpreted, and correct conclusions courageously faced, no matter where they may lead or what prejudices they may run across.

What Communities Can Do.

"Looking at the matter more narrowly, there are many things that commercial organizations and business men may well consider. Each urban community might well, in cooperation with leaders in the surrounding districts, undertake a careful survey for the purposes of better production and better organization. It may assist in the securing of a good county agent where there is none and effectively cooperate with him. Business men and business organizations may help work out better wholesale and retail markets for farm products, farmers' community buildings may be planned and established, and good roads radiating into the back country may be promoted to mutual advantage. Bankers in many parts of the country may be brought to see that by their wise use of credit will be determined the question whether or not the rural districts shall have a well-balanced, prosperous agriculture. Not a few of them are learning the lesson, and in some States the banking associations have intelligently and effectively organized State committees, composed of a member from each county, for the betterment of rural life. A peculiar opportunity is afforded for the sympathetic and constructive assistance of the banker and the business man in connection with the inauguration of the farm-loan act and the formation of local associations, and in the furtherance of cooperation among farmers for the betterment of production and marketing.

Promotion of Stability.

"Another thing you in particular can do. Lack of stability and uniformity in agricultural conditions is one of the explanations not only of unsatisfactory financial arrangements, but also of inadequate marketing facilities. Even after we have done

the best we can for marketing and finance, there will be difficulties growing out of rapid agricultural changes, of shifting of population; in short, out of the continued pioneering of the Nation. Certain results expected from financial or marketing studies and legislation can be secured only with a stable and balanced agriculture. Some of the most pathetic failures arise in regions where farmers have settled under alluring inducements. Not infrequently they find novel conditions and difficulties of production, but more frequently difficulties of marketing through lack of planning or through remoteness from markets. Much of the responsibility for such misfortune lies at the door of the real estate agent and of the town which is overanxious to build itself up. Obviously, some sort of responsible oversight and direction would be desirable and helpful, and I can think of no agents better adapted to render assistance in this direction than the membership of this body. False advertising and lack of prevision or of previous planning is shortsighted in this field as in others, and in the long run defeats the objects and ambitions of the advertisers.

A Class Peculiarly in Need of Help.

"There is one element of the farming population which in particular should receive sympathetic consideration. It is a class which is in the minds of most of us when we are thinking about the acuter agricultural problems. Too frequently they have little or no collateral and are not good farmers, or, at least, not good business farmers, and too often at the close of the year's operations they have little or nothing left over and move on to try their fortunes in some other community. With a relative low standard of living, inferior producing ability, usually cultivating the less satisfactory land, they not infrequently find themselves in the hands of the more exacting landlord or merchant. We must do for this class zealously what we are trying to do for the whole farming population. Their problem can be reached only by fundamental alterations, reached through educational methods, better schools, better health arrangements, better farming methods, and better marketing. Many agencies are now enlisted in its behalf. All the work of the Department of Agriculture, of the land-grant colleges, of the State departments of agriculture, and of the better farmers is aiding. All the recent legislation will contribute. The immediate need is to enlist the intelligent, sympathetic aid of the business man, and especially of the banker.

What One Business Man Accomplished.

"Let me give an illustration of what I have in mind. I shall give only one of many. It may serve to indicate what the urban community, what business men, may do almost anywhere in the Union. Thirty years ago I knew well a certain county in the South. I recall vividly the conditions then existing. The farming was neither better nor worse than that in the section generally. The better farmers were fairly comfortably off. Those below them were holding their own. Those still lower down were living from hand to mouth, their farming scarcely more than a pretense. There was a business man, a banker, in the county who had vision and sympathy. He turned his attention to the rural districts. He began to see what could be done about cotton. He established connection with the Department of Agriculture and entered upon the work of cotton breeding. After a long and difficult experience he succeeded in breeding a seed that would produce an inch-and-a-quarter staple. The next task was to get enough farmers to produce the cotton and to create and to establish a local market. But this was not all. The cotton had to be properly ginned. It was a new sort of product, and the spinners had to be reached. Intelligence and persistence won. I was in that county a year ago. I found it a sort of oasis. When cotton was selling at 12 cents a pound in all the rest of the South, 90 per cent of all the cotton in that great county was selling at from 19 to 20 cents a pound. Another business man had attacked the problem of corn production and had won his fight. These two men rebuilt their county agriculturally and incidentally made their towns. The farmers were assisted in solving not only their marketing problems but their rural-credit problems as well.

Outlook Bright.

"I am optimistic about the future of American agriculture. We still have vast undeveloped resources. Our farmers are the most alert and capable in the world. They do not produce more per acre than any other farmers in the world—it would be foolish for them to undertake to do so—but they do produce from two to six times more per man, per unit of labor and capital. They use more and better machinery. They have the assistance of more powerful practical and scientific agencies. No other three nations in the world combined have as powerful forces aiding the farmers as this Nation has. The land-grant colleges and experiment stations are without parallel. They are 67 in number, have a total valuation of endowment, plant, and equipment of 128 million dollars, an income of more than 26 millions, with 4,500 teachers, a resident student body of over 60,000, and a vast number receiving extension instruction. Their great ally, the Department of Agriculture, is unquestionably the greatest practical and scientific agricultural organization in the world, with a total annual budget of $36,129,000, having increased in three years by 50 per cent. It has a staff of more than 16,000 people, many of them highly trained experts, and all of them of consequence, with three exceptions, in the classified service. The farmers have the benefit now of a number of long-needed and highly beneficent legislative enactments. The Nation is committed to an expenditure of millions for the direct education of the farmers, and of $160,000,000 from Federal and State cooperative funds for good roads over a period of five years, with many additional millions annually arising from local sources. Great numbers of farmers and of farmers' organizations are alert, intelligent, and acting vigorously for the betterment of the life of the Nation. No other people have such enormous expenditures for general education. Other countries are depending upon us more and more for foodstuffs, and in the years to come Europe in particular is likely to ask our service. There never has been any real substantial competition with the American farmer, it is not threatening to-day, and I am not in the slightest degree apprehensive about the future, and one does not compliment the intelligence of the American farmer who attempts to alarm him. My plea is that business men enlist for more active duty in the struggle for rural improvement. The call for unselfish service is insistent and I am confident it will not fall upon deaf ears."

TREATED WOODEN SILOS.

Thorough Preservative Treatment Prevents Decay and Lessens Swelling or Shrinkage of Staves.

Experience with silos built of untreated wood have shown that they are subject to more or less decay. Even such durable material as heart cypress or redwood is not immune. Deterioration usually occurs near the foundation of the silos where certain conditions of moisture favorable for the development of the fungus of decay exist. Decay may also attack sappy wood in any portion of the structure.

In 1913 about 100,000,000 board feet of high-grade lumber were used in silo construction, and the consumption of lumber for this purpose is steadily increasing. The importance of some kind of preservative treatment to prevent decay in wooden silos therefore has become generally recognized. Several manufacturers of wood-stave silos are now making use of preservatives, so that it is possible to purchase the silo material already treated.

Of the various preservatives in general use, a good grade of coal-tar creosote is very satisfactory for preserving timber. Almost any thorough method of treatment with this preservative ought to add to the life of the silo. Superficial methods, however, such as applying with a brush, dipping in the preservative, or spraying, are not sufficient. By far the best method is to have the staves treated with the preservative in a closed retort under pressure, and when so treated they should last indefinitely and should be more satisfactory to the purchaser.

Those who are considering the purchase of treated silos should investigate carefully the methods used, and if greatest permanence is desired should choose only material that has received a thorough pressure treatment. Silos built of such material have the additional advantage of reduction in the swelling and shrinking of the staves, and, hence, they can be kept tight more easily. Another advantage of silos built of well-treated wood is that they need not be painted.

Effect of Preservative Treatment on Silage.

To determine the effect of a preservative treatment upon the durability of wood used in silos, and to obtain information as to the effect of the treated wood upon the surrounding silage, the Federal Forest Products Laboratory began experiments in 1910 in cooperation with the University of Wisconsin. About five years after the experiments were begun the treated wood had not commenced to decay. Information in regard to the effect of treated wood upon the surrounding

silage was obtained by an independent test after the first season, wood treated with creosote having been buried in the silage during the process of filling. This contaminated the silage sufficiently to give a strong odor, but the quantity of creosote in the feed could not be determined by analysis. This silage when fed to cows was not relished, and two of the animals were affected slightly by it. This was a very severe test, however, for the wood was given a heavier treatment than is now considered necessary. Moreover, had the contaminated portion been thoroughly mixed with the rest of the silage, it is considered doubtful whether the effect would have been noticeable. This conclusion is borne out by the results obtained in practice. During the several years in which it has been the practice to treat wood for silos the Dairy Division of the department has not heard of a single case in which the health of the animals has been impaired by feeding such silage.

CARE IN PICKING COTTON.

Careful Methods of Handling May Raise Grades—Price Differences Greater Than Usual.

Cotton growers now have one of the best opportunities of many years to profit by increased care in handling their cotton, according to cotton growing and marketing specialists of the department.

Care in picking, assembling, and hauling seed cotton, and in ginning, as well as in the handling of the bales, may result in raising the selling value of the fiber materially. This is true every year. During the present season, however, the restricted crop and limited supplies at the mills, coupled with the steady demand, have sent prices to high levels, making the increase in returns to the grower for each higher grade proportionately greater. The advantages in receiving the highest possible grade are so obvious under the present favorable marketing conditions that many farmers no doubt will adopt the more careful methods which make the higher values possible.

Ordinarily the matter of grades does not receive nearly enough attention. As a result, farmers lose several million dollars annually. This loss would be proportionately greater under the high ruling prices this year if there were no improvement in handling practices. In 1911 the average price of Middling was 9.56 cents; in 1912, 12.20 cents; in 1913, 13.49 cents; in 1914, 7.94 cents; and in 1915, 11.99 cents. Middling is now selling around 16 cents.

The following suggestions for practices which will tend to raise cotton grades are made by the cotton-marketing specialists of the department:

Don't pick cotton before it has matured. This will insure stronger fiber.

Pick carefully to avoid mixing leaves and trash in your seed cotton. Don't store the seed cotton on the ground. Such precautions will help to keep the lint clean and white.

Don't have cotton ginned until it is thoroughly dry. Ginning while the cotton is wet produces a rough, neppy lint which causes great waste in spinning. Such cotton, therefore, will not bring the best prices.

When practicable have the ginner run his machinery slowly enough to produce an even, smooth lint, and pay willingly a slightly increased fee.

Protect your baled cotton carefully from dust, smoke, and moisture, whether hauling it to market or storing it on the farm or elsewhere.

It also pays to handle and store cotton seed carefully. This product is easily damaged if stored on the ground, permitted to get wet, or otherwise carelessly handled. Cotton seed is now selling at high prices and the farmer, therefore, will profit by keeping it in such condition that it will top the market. It will also pay him to keep the seed in good condition for planting. Whereas cotton seed sold for $17.10 a ton in 1911, it was bringing $35.22 a ton on August 15, 1916.

AREA AND CROP YIELD.

Proportion of Farm Given to Intertilled Crops as Related to Production.

Given a hundred acres to be devoted to crops in general farming, what proportion should be devoted to corn or other intertilled crops in order to secure the most favorable effect on crop yields?

The department believes that the answer to this question can approximately be determined, locally, for any given type of farming on any given type of soil. Recent surveys conducted by the Office of Farm Management indicate that for Chester County, Pa., and for the corn belt of Illinois it is about 37 acres, and that for Lenawee County, Mich., it is about 32 acres. It was found that farms devoting to intertilled crops areas ranging from 32 to 37 per cent of total crop acreage realized, on the average, higher yields for all crops than did those farms upon which either a larger or a smaller percentage of crop area was devoted to corn, potatoes, and other crops of that class.

In making this investigation the "crop index" was used as a measure of efficiency in the maintenance of crop yields. The crop index indicates the standing of a farm in percentage of yielding power, the yield of the average farm of the group surveyed representing 100 per cent. It was found that the crop index went up uniformly with an increase in acreage of intertilled crops until that acreage reached a point above 31 and lower than 38 per cent of the total crop area, and then declined uniformly as such acreage increased above that limit.

In explanation of the falling-off in yield of all crops after the area in intertilled crops passes a certain point, the department specialists advance the theory that it is due to the excessive loss of humus entailed by the extra tillage. It was found that this falling-off in yield was present even when there was an increase in the number of live stock per acre.

In analyzing the data secured through these surveys, an effort was made to establish also the percentage of area that can most profitably be devoted to perennial grass for hay, but the results obtained in this regard are not so striking as those relating to intertilled crops. It seems, however, that, for Chester County at least, this area is about 36 per cent of the total crop area.

These figures are not advanced as wholly conclusive, but as suggestive as to what may be done along this line. The department believes that they indicate the possibility of determining approximately the part of a farm that should be devoted to each of the major classes of crops to secure maximum yields under given general conditions—what percentage of crop area to intertilled crops, what to grain, and what to perennial grasses.

A detailed discussion of the data in question will be found in Circular No. 57 recently issued by the department.

SELECT SEED CORN.

(*Continued from page 1.*)

rels, boxes, or crates during the winter, but in either case they must not be exposed to a damp atmosphere, for they will absorb moisture and be injured. Some farmers place the thoroughly dried seed ears in the center of a wheat bin and fill the bin with loose, dry wheat.

In localities where weevils and grain moths injure stored grain, the thoroughly dry seed ears should be stored in very tight mouse-proof receptacles with 1 pound of moth balls or naphthalene inclosed for each bushel of corn. This quantity tightly inclosed with the corn will prevent damage from these insects and will not injure the seed. If at any time signs of weevils or grain moths show on the corn, it should be inclosed with carbon bisulphid in practically air-tight rooms, bins, boxes, or barrels for 48 hours. The bisulphid should be placed in shallow dishes or pans on top of the seed. One-half pint is sufficient for a box or barrel holding 10 bushels or less. One pound is sufficient for a room or bin 10 feet each way. After fumigation the ears must be thoroughly aired, taking care that no fire is present when the fumigating box opened.

HARVESTING CORN.

Methods of Handling Crop Vary in Different Localities—Machinery Used in Many Sections.

On many well-managed farms the work of harvesting and storing the corn crop begins with the filling of the silo. Corn is one of the best crops for this purpose, if not the very best. Sorghum stands dry weather much better than corn and for dry regions is a surer crop, but it is more inclined to fall down and become tangled than corn, thus making it somewhat more difficult to place in the silo. This difficulty is overcome to a large extent by growing the two crops together, and the silage made from these two crops grown together is usually superior to that from either crop grown separately.

When the silo first came into use it was thought necessary to fill it with very green succulent growth. This is now known to be an erroneous idea, and the silo is regarded much as a storeroom or food preserver, the value of the silage depending to a very great extent on the nutritive value of the crop with which the silo is filled. To this end it is advisable that the corn shall have reached a degree of ripeness indicated by rather hard, well-dented, or glazed kernels and partially dried husks before it is placed in the silo. There is a week or 10 days when the ears are in this condition and the stalks still contain sufficient sap to cause the silage to pack well in the silo. It is even better to add a little water to accomplish the latter purpose than to cut the crop before it has attained its full feeding value.

Stripping.

In some sections the practice of stripping the blades by hand from the standing stalks was for years one of the established operations in connection with harvesting the corn crop. The blades when thus gathered and well stored furnish an excellent forage, but there are now cheaper methods of harvesting without any loss in quality.

Topping.

It is still quite a common practice in some localitites to top the stalks by cutting them just above the ear. By this method the portion of the stalk which is eaten by stock most readily and with least waste is obtained. When the grain crop is late in maturing, or wet fall weather prevents the proper drying of the ripening ears, the topping of the corn may be found advisable. If the ears have become hard, the kernels dented, and the husks partly dry before the topping is performed, no reduction in yield will result. A heavy growth of cowpeas may make the cutting of the entire plant impracticable and warrant the topping of the crop. If the corn is desired for seed, topping will facilitate the drying of the ears and thus make it possible to select the seed before it is injured by freezing. Ordinarily, however, it is found more expensive to top a corn crop than to cut and shock the entire plant.

Cutting, Shocking, and Husking.

Over large areas in the principal corn-growing States corn is grown primarily for the grain, and each farmer decides for himself how much of the crop will be cut. This is usually determined by cutting just enough to feed the animals maintained on the farm. The chief objection to this method is that many farmers do not maintain enough animals to consume all of the corn stover produced. If the ears are gathered from the standing stalks and no use is made of the stover, fully one-third of the crop is wasted. The term "fodder" is applied to the entire plant as ordinarily cut and shocked, while the term "stover" is applied to the portion remaining after the ears have been pulled or husked.

Generally speaking, there is little difference in cost between husking and cribbing corn from the shock and husking and cribbing it from the standing stalk. In some sections men will husk from standing stalks at a lower price than from shocks, but the cost of teams, although they are not usually very busy with other work during corn-husking season, must be taken into consideration. Considering the expense of husking from the standing stalk and from the shock as equal, it is evident that the stover has been obtained for the money paid for having the corn cut and shocked. This cost of cutting and shocking is very much less than the value of the stover, if it be properly stored and fed. If left in the field until February or March exposed to the winds and rains of winter, it is questionable whether its feeding value is equal to the cost of cutting and shocking.

There are sections in the Central and Southern States where the soil is rich and the growing season long, causing the corn to make a large, tall growth of stalk, which does not furnish a good quality of stover. In such sections it may be better to obtain the necessary quantity of forage by cutting several hay crops each year than by saving the corn stover. This is especially true in localities where warm, damp weather causes the corn stover to lose its feeding value rapidly.

Jerking the ears and storing them unhusked is a method of harvesting employed in some sections, especially in the South, where the argument usually given in its favor is that if the husks are on the ears they are more protected from the grain weevil. The destruction of corn by this insect is one of the drawbacks to more extensive corn culture in the South. As soon as the corn becomes dry enough to crib, weevils are frequently found working under the husks on the kernels of the ears, sometimes to the number of 20 or more to the ear. It is a question whether the corn is more seriously injured by transferring the weevil with the unhusked ears to the crib than would result were the corn husked in the field, causing the weevils to drop to the ground and thereby leaving most of them in the field.

The total amount of work required to jerk the corn and afterwards husk it is considerably greater than that required to husk it directly from the standing stalk, and the quantity of forage obtained by gathering the husks is not sufficient to pay for the extra work. Much better forage could be obtained more cheaply by other methods. If the husks are sold advantageously for mattress making it is well to perform the two operations of jerking the ears and afterwards husking them in a manner that will furnish husks of good quality. The proportion of husk varies greatly among the different kinds of corn, but it is sufficient to say that it requires fully one-half more room to store the ears unhusked than husked.

In sections where the farms range in area from 80 to 160 acres, and diversified farming is followed so that all of the stover is fed, husking from the shock is a common method of harvesting the ears. For keeping the ears clean and to facilitate loading the piles of corn into the wagon, sheets of ducking 6 or 7 feet square are of very great assistance and should be universally used rather than to throw the ears upon the ground, where they may become damp or even muddy and from whence it is necessary to pick them by hand. As the corn should be hauled and stored soon after it is husked, a great supply of these sheets is not necessary, for as soon as the pile of corn from one shock is loaded the sheets are ready for use at other shocks. Where the shocks yield 4 or 5 bushels of corn it will be necessary to throw some of the ears into the wagon by means of a basket; the remaining ears can then be thrown into the wagon quickly by two men, each taking hold of two corners of the canvas and transferring the corn on the sheet directly into the wagon. Boxes or troughs in some sections are employed in place of sheets, but the sheets are lighter and in every way more satisfactory. During very dry and windy weather corn should not be husked from the shock, as the loss of stover is too great. Calm days when the fodder is slightly damp are ideal for husking shocked corn.

Binders.

The corn binder with bundle carrier is satisfactorily used in cutting corn of average or small size on land that is not very steep or stumpy. On the comparatively level prairie land of the North Central States the corn binder is very generally used in cutting and shocking corn. In light corn or on

level land two horses will suffice, but for faster work or heavy corn the use of three or four horses is much more satisfactory. Three men, one to run the binder and two to shock, and two teams can cut and shock about 7 acres of corn a day. However, conditions vary to such an extent regarding the weight of the corn crop, the lay of the land, etc., that it is impossible to give figures that will apply to all cases. In sections where the corn binder is successfully used the principal objections to its use are the cost of twine, which remains upon the fodder but a short time, and the knocking off of ears in the process of binding. In all cases the quantity of corn knocked off by the binder is great enough to warrant driving a wagon over the field and gathering the ears from the ground after the corn is cut and shocked. This is necessary, because the presence of the shocks in the field prevents the turning in of hogs or cattle to gather up the ears knocked off by the binder.

The use of a binder with a bundle carrier saves very much of the hard labor of cutting and shocking, and the greater ease of handling the fodder when bound into bundles of convenient size saves labor enough to compensate for the twine used.

The stubble cutter should be attached to the corn binder whenever possible, as the early cutting of the stubs hastens their decay and puts the ground in a better condition for the following crop.

Huskers and Shredders.

The use of shredding machines is quite general in many corn-growing sections. Sometimes the machines are used for shredding the stover after the ears have been husked from the shocks by hand, and in other cases both the husking and shredding are done by the machine. The shredding of the stover puts it in a more compact form for storing and a more convenient form for feeding and avoids the troublesome work of handling manure in which there are long coarse cornstalks. Shredded stover is fed with much less waste than stover in any other condition. It has been estimated that shredded stover will go 40 per cent further in feeding cattle than the whole stalks and considerably further than when the stalks are put through a feed cutter. As there are shredders of varying capacities, a farmer may purchase a machine suited to the quantity of work to be performed, or a number of farmers in a community may own a machine jointly. Shredding fodder by the acre and shredding and husking by the bushel are common in many sections where crews operate huskers and shredders and travel from farm to farm. The blowing of the shredded material from the shredder and husker to the center of a feed shed, so that it can be fed in racks around the general supply, is a very economical way of using corn stover.

FARM INSURANCE.

Farmer's Need of Property Insurance and Suggestions for Meeting This Need.

Four kinds of property insurance are written in which the farmer is particularly interested. These are, insurance of buildings and personal property against loss by fire or lightning, insurance of the same objects against loss by windstorm, insurance of growing crops against hail, and insurance of live stock against death by disease or accident.

To the average farmer the first two kinds of insurance usually make the strongest appeal. One reason for this is doubtless the feeling that fire and windstorm are the destructive agencies that most frequently, at a single stroke, deprive their victims of the accumulated earnings of many years. Perhaps a second reason why farmers usually first provide themselves with fire and windstorm insurance is the fact that these are, as a rule, relatively less expensive than the other two kinds of insurance here considered. By this is meant that a larger percentage of the money collected from the insured can be used to compensate the sufferers of loss than is the case with hail or live-stock insurance. A simpler organization is possible, and fraudulent claims are more easily guarded against.

The fact that hail and live-stock insurance are less generally carried by the farmers of the United States does not signify that these forms of protection are not important. Under certain circumstances and conditions they may even outrank in importance the other two. As the American farmer learns to make of agriculture more strictly a science, and to eliminate, as far as possible, the element of chance, he will doubtless insist on the further development of all the kinds of insurance here enumerated, and perhaps of still others.

Few farmers are so rich that they can wisely go without insurance. Happily few are so poor that they are compelled to go without a safeguard that to the average farmer may be classed as a necessity. The very farmer who has but few buildings and little personal property, and is perhaps least able to pay for insurance protection, is really the one who can least afford to go without it. Hence the importance of making insurance as cheap as it is possible to make it and yet have it efficient and dependable.

About two-fifths of the farmers in the United States have found a method of providing themselves with fire insurance at greatly reduced cost through mutual or cooperative insurance associations, embracing a single county or some such limited territory. Dependable and cheap windstorm insurance has similarly been provided by means of larger mutual companies, often operating in close relationship with the local fire-insurance mutuals. Local windstorm-insurance companies have, however, in several instances, been taught by experience, and to their own sorrow, that while each group of farm buildings and to a considerable extent each building within the group constitutes a separate and distinct risk so far as the fire hazard is concerned, the same is not true with reference to the windstorm hazard. Safety and stability in windstorm insurance demand that the amount of insurance be large and the risks widely scattered. The same is true of hail insurance.

A smaller number of farmers have also provided themselves with hail and live-stock insurance by means of mutual associations. While a number of these associations have a successful record covering many years, companies representing these kinds of insurance have been less generally successful than have farmers' mutual fire-insurance and windstorm-insurance companies. Some of the reasons for this difference in success have already been suggested.

Not infrequently letters come to the department relating stories of hardships due to losses of property not covered by insurance, and asking if some provision does not exist by which the department can aid deserving farmers who have met with special disaster to their property. The answer to such inquiries must, of course, be in the negative.

The Office of Markets and Rural Organization of the department has undertaken a careful study of various kinds of property insurance of interest to the farmer. The information in its possession is at the disposal of groups of farmers who desire to organize with the view of providing themselves under favorable conditions with insurance best adapted to their needs.

COLLECTIVE BORROWING.

Farmers Cooperate in Establishing Improved Relations with Banks.

What cooperation among farmers can do to improve their borrowing capacity at banks is thus described in Bulletin No. 409, Factors Affecting Interest Rates and Other Charges on Short-Time Farm Loans, recently published by the department:

"In some parts of the country where farmers, if they obtained loans at all as individuals, were compelled to pay very high rates of interest, plans have been tried out under which groups of farmers have been able collectively to establish improved relations with banks. In several localities of the central western and Rocky

Mountain regions farmers have formed temporary agreements under which they act collectively as guaranty associations for approved loans of members. The added security from these associations has enabled members to obtain loans at reduced rates of interest. Another plan, illustrated by what has been done in a Texas community, involves a temporary agreement between a group of farmers and a bank, but differs from the plan previously mentioned in that the added security consists of a reserve fund left with the banker. Each borrower allows the bank to retain 5 per cent of his loan for a reserve fund, which is held as a guaranty for all the loans made under the agreement and is returned to the farmers at the termination of the agreement.

"Under another plan, which has been employed in several communities of the Northwest, a group of business men agree to deposit a sum of money with a bank and guarantee the loans given to farmers for some specific and approved purpose. In all such cases farmers have been enabled to obtain credit on more favorable terms than usual.

"In a number of localities in this country groups of farmers have organized cooperative credit associations or credit unions. Usually each credit union makes definite arrangements with some bank by which the latter acts as a depositary and furnishes loans on specified terms. Thus one of the unions in North Carolina receives 3 per cent interest from its bank on deposits subject to check and 4 per cent on savings accounts left on deposit three months or longer, and pays 5 per cent interest on its loans from the bank. The credit union in turn pays its own members 4 per cent on their savings accounts and furnishes them loans at 6 per cent. Such a credit union not only accustoms its members to the use of check and savings accounts but also enables the members to obtain loans for approved productive purposes on better terms than they could obtain elsewhere."

MAY USE COTTON STANDARDS.

Department Loaning Cotton Standards to County Agents for Benefit of Producers.

To assist in bringing about more extensive use of the official cotton standards of the United States by growers in their sales, the Office of Markets and Rural Organization is cooperating with the States Relations Service of the department in placing in the hands of county agents in the cotton-producing sections sets of practical forms of the standards. The forms are furnished only after the agents have given satisfactory assurances that they will be kept in a place accessible to cotton growers, in the care of a competent custodian who does not profit directly from trading in cotton.

More than 60 sets of the practical forms of the standards already have been shipped to county agents. It is expected that more than 100 will soon be placed in this way. Each set of the practical forms consists of the nine grades of white cotton. The sets remain the property of the United States Government.

In arranging for the keeping of the standards in the counties the Office of Markets and Rural Organization has approved such agencies as banks, chambers of commerce, boards of trade, stores whose proprietors do not trade in cotton, etc.

The official cotton standards of the United States are used by practically every important spot market and exchange in the South, and it is the desire of the cotton specialists of the Department of Agriculture that the sales and purchases of cotton from the time it leaves the farmer's hands until it reaches these larger markets also shall be conducted on the basis of the standards. It is believed that the presence of a set of the practical forms in each county, where farmers may examine and become familiar with them, will be a valuable educative force in grading and will tend to bring about the substitution of methods of more exact classification in place of the approximations to grades now often employed in gin, street, and warehouse sales.

With the forms of the standards in easy reach for examination and comparison and the published reports of grade prices in the nearest important spot market available through daily papers, it should be possible for growers to arrive at a reasonably close valuation of a given grade of cotton. It is expected that some county agents will figure the local valuations from day to day for the different grades, taking into consideration the cost of handling cotton to the near-by spot market, and will bulletin the figures. The Office of Markets and Rural Organization will furnish such county agents from time to time quotations on the various official grades from the nearest important spot market, as well as from all the spot markets designated under the cotton-futures act.

FREED FROM TICKS.

Forty Per Cent of Territory Originally Quarantined Now Free of Cattle Ticks.

Forty per cent of southern territory put under quarantine on account of Texas fever tick on July 1, 1906, was released from quarantine on this account September 15, 1916, when the recent order releasing additional territory became effective. In all, 294,014 square miles have been freed of this pest, and there now remain under quarantine 434,529 square miles, distributed as shown in the appended table. Of special interest is the fact that four States have completely eradicated the tick from their borders. The figures in the table, however, do not indicate the active work which the States, counties, and the local people are carrying on in cooperation with the department to dip their cattle and free their territory from the costly and vexatious quarantines necessary to prevent the spread of this cattle scourge to freed or new territory. Those in charge of the work are hopeful that within the next two or three years many other States will be in the tick-free column and that before long the entire South can use fully its natural facilities for dairying and the raising of meat animals, on which the cattle tick in the past has imposed a heavy tax.

Progress in tick eradication, July 1, 1906, to Sept. 15, 1916.

States.	Counties.					Area.			
	Infected.			Released.		Infected.		Released.	
	July 1, 1906.	Sept. 15, 1916.				July 1, 1906.	Sept. 15, 1916.		
		Whole.	Part.	Whole.	Part.				
						Sq. mi.	*Sq. mi.*	*Sq. mi.*	*Per ct.*
Alabama	67	52	4	11	4	51,279	40,753	10,526	20
Arkansas	75	50	7	18	7	52,525	37,566	14,959	29
California	15	.....	.....	15	.....	79,924	.....	79,924	100
Florida	47	44	1	2	1	54,861	51,061	3,800	7
Georgia	143	90	1	52	1	57,438	42,469	14,969	26
Kentucky	2	.....	.....	2	.....	841	.....	841	100
Louisiana	60	56	1	3	1	45,409	43,142	2,267	5
Mississippi	78	38	1	39	1	46,340	21,150	25,190	54
Missouri	4	.....	.....	4	.....	1,386	.....	1,386	100
North Carolina	75	24	1	50	1	37,365	12,351	25,014	67
Oklahoma	[1] 61	27	7	22	12	47,890	25,617	22,273	46
South Carolina	44	12	.....	32	.....	30,495	10,467	20,028	65
Tennessee	42	.....	.....	42	.....	16,987	.....	16,987	100
Texas	190	110	2	78	2	191,885	148,177	43,708	22
Virginia	30	3	1	26	1	13,918	1,776	12,142	87
Total	933	506	26	396	31	728,543	434,529	294,014	40

[1] Only portions of 5 of the 61 counties were quarantined.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., OCTOBER 11, 1916. No. 10

STORING CORN CROP.

Store Grain in Thoroughly Ventilated Moisture - Proof Cribs — Protect Stover from Weather.

Whether corn stover is shredded or not, it is of great importance that it be well stored and not left long exposed to the weather. The mistake is sometimes made of placing the hay crop in sheds and barns and leaving the corn stover in shocks in the field. The reverse is better, inasmuch as most kinds of hay will not depreciate so rapidly in feeding value and will keep better in stacks and ricks than corn stover. Unless placed under cover corn stover should be fed in the fall and early winter. If left exposed until February or March it has little feeding value.

In the principal corn-producing States the autumns are usually dry, and corn fodder dries thoroughly in the shocks and is shredded and stored in barns or feed sheds with little danger of heating or molding. The fodder should not be wet when shredded and stored, but damp days are preferable for doing the hauling and shredding because the blades are more pliable and the fodder is therefore handled with less waste. But in some sections, especially in northern States, where the corn is full of sap when cut, and where damp fall weather prevails, much care is necessary in storing corn fodder or stover to prevent heating and molding. In such localities it should be placed under cover in ricks not more than 6 or 8 feet in thickness, or, if shredded, layers of dry straw several inches deep should alternate with layers of the shredded stover. The depth of the layers of stover can vary from several inches to a foot or more, according to its dryness when stored. The dry straw will take up some of the moisture from the stover and prevent heating.

There was a time in the history of the corn-producing belt when rail pens were about the only available means of storing the corn crop. Much to the discredit of some corn growers this method of storing is still in vogue, even in sections where good means of storage could be afforded at little expense. It is no uncommon sight to see rail pen after rail pen filled with ears of corn and without any cover, exposed to all the rains and snows of winter, and these in sections of the country that produce the most corn and are consequently most interested in higher-priced corn. This corn remains in apparently good condition during the cold weather and is usually placed upon the market in early spring. Filled with water, it is not long after it is loaded into box cars or vessels until it heats and spoils. The installation of elevators where such corn can be kiln dried has been brought about by this poor manner of storing the corn crop. There is a general prejudice against kiln-dried corn, resulting from the fact that kiln drying was first employed and is at present employed to a very large extent to prevent further heating and fermentation of corn that was not allowed to dry properly or was poorly stored before being placed upon the market. This state of affairs, which results from allowing the corn to remain wet during winter and necessitates the removal of the water by expensive means, keeps the price of corn lower than it would be if the corn were allowed to dry in the fields and were kept dry until placed upon the market. Grain buyers would pay a better price if the general supply of corn reached them in a condition that would insure its preservation without drying and the resulting shrinkage.

In addition to affording thorough ventilation to the stored grain and protection from driving rains, cribs should be constructed in such a manner that they can be filled and emptied with the least possible labor. For level ground double cribs with an elevated driveway and approaches that will enable the loads to be driven through the cribs and dumped or scooped out of the wagons without any high pitching are very satisfactory.

Protection from Insects, Mice, and Rats.

In sections where insects are destructive to stored grain, cleanliness is of value in preventing injury from this source. Small

(*Continued on page 3.*)

DEPARTMENT DOES NOT RECOMMEND ANY MAKE OF TRACTOR.

There have come to the attention of the United States Department of Agriculture items appearing in the press which are so framed as to give readers the impression that the department in its publications has praised or recommended a farm tractor of a particular make.

As the department has not done this, and in fact systematically refrains from recommending any particular make of tractor or other machine, the public is warned to regard as false any statement asserting or implying such recommendation by the department.

MARKET NEWS SERVICE.

Aims to Furnish Information Regarding Factors Affecting Marketing of Perishable Products.

Although well-planned production and careful preparation of perishable farm products may be of great importance as factors in successful marketing, their value is dependent entirely on the choice of an advantageous market. Excellence of condition will not sell products in a market in which there is no demand for them. If the farmer ships in a haphazard way to any market point that happens to strike his fancy or suit his convenience, he may find from losses, when it is too late, that the point chosen was already fully supplied with commodities like his own or that for other reasons there is no sale or but an unprofitable one for his wares. Consistent efficiency in marketing any commodity can be achieved only through the elimination of chance in choice of market points to as great an extent as possible, and this is especially true of perishables. Far from being a matter to be guessed at, the finding of a profitable market is the central and dominant problem in all distribution.

Information Needed.

The ideal conditions for marketing would be those under which every party to the transactions was familiar with all the market factors. This would require information in regard to the amounts of the various products ready for market and to be marketed in all producing areas; the amounts on the way to market and their destinations from day to day; the normal consuming power and the existing supply and demand in all markets; the qualities and prices of existing supplies; the conditions in producing areas likely to affect production; and the conditions at market points which might influence consumption.

When the Office of Markets and Rural Organization of the department began its marketing investigations in 1913, it found that practically no information in regard to these market factors was available to most farmers and dealers. Some dealers conducting large businesses, some dealers' organizations, and a few associations of producers had machinery for securing partial information in regard to produce in general or fairly full information as to a few products,

and found the possession of such knowledge highly profitable. One of the best examples of such machinery controlled by producers was that of the citrus-fruit growers of California, who for several years had been intimately informed in regard to most of the elements affecting the market for oranges and lemons. Though the value to such organizations of the information gathered by them was conceded, the practicability of building up and operating a market news service for many products for the information of the whole country was questioned in many quarters. In regard to perishables in particular, the fear was expressed that published information indicating that a given market was not sufficiently supplied with certain products and that high prices prevailed there would cause large numbers of shippers to send their commodities to such a point, thereby causing a glut which would bring in its train financial losses and an undermining of confidence in the news service.

Shipping Practices Make News Service Possible.

When the potentialities of such a general market news service were studied by the Office of Markets and Rural Organization, however, it was found that shippers of perishables were not operating on an individual basis to the extent generally supposed. The bulk of the perishables shipped, it developed, was sent either through cooperative producers' organizations or by local shippers or distributors to whom groups of producers sold their produce or with whom they made commission arrangements. The men in charge of such relatively large-scale shipments were, for the most part, fairly familiar with general transportation and distribution practices and could be depended upon, it was felt, to make reasonable use of market information. The market specialists of the department determined, therefore, to experiment in conducting a market news service covering a few perishable products.

Beginning of the Government News Service.

The work was begun in April, 1915, with the opening of the strawberry harvest in southern Louisiana. This was practically the only area then shipping berries to northern and northeastern markets, and complications were therefore at a minimum. This first work consisted largely of keeping the producers informed in regard to the demand and prices from day to day in the principal markets and as to the amounts of their own products at such points and on the way northward. Information on shipments was also given to market centers. The results of the work satisfied the growers, and at the close of their season they asked for a continuance of the service in the future. The Government market specialists next took up the market-information work for berries in other producing sections farther north and later dealt similarly with tomatoes, cantaloupes, and peaches.

Service Extended.

As a result of their successful experiences in the experimental work with four perishables, the specialists of the Office of Markets and Rural Organization believed that a general market news service was practicable, and early in 1916 made arrangements for extending the service of the previous year to include more than half a dozen additional perishable products. This enlarged service has been in operation since early spring, dealing with crop after crop as the active shipping season was reached in the chief producing centers. Onions from the Texas producing areas were added in April, South Carolina asparagus was then given a limited service, southern watermelons were taken up in early summer, and pears and prunes from northwestern producing regions were added later. The other additional crops covered or to be covered in 1916 include grapes, apples, and white potatoes. Though some developments in the details of procedure have been made with growing experience, the service is now practically in the form in which it originated and gives promise that it can, without radical changes, meet the future needs that will come with growth in scope.

How the News Service Operates.

The aim of the market news service is to furnish information in regard to as many of the factors affecting marketing as practicable to all persons and all organizations interested in the perishable products reported. The machinery of the Office of Markets and Rural Organization for collecting and distributing this information consists of a staff of representatives in the principal producing areas, another staff in several of the chief market centers, and a central office staff in Washington. One important feature in the operation of the news service is the assistance rendered by division superintendents of railroads, who telegraph to Washington information in regard to the shipments of perishables originating on their divisions and covered by the news service. The Washington office serves as a clearing house for all the information telegraphed in by the various field representatives. At the central office these data are arranged so that they will be most useful and are then telegraphed out for final distribution through the members of the field staff.

Agents at Market Points.

In 10 of the principal markets of the country salaried agents have been placed to gather local market information and to serve as distributing agencies in their localities for the general information. The centers already covered in this way are New York, Chicago, Philadelphia, Boston, St. Louis, Pittsburgh, Cincinnati, Buffalo, Minneapolis, and Kansas City. In 21 other large markets arrangements have been made with dealers to furnish the local market information. Such temporary representatives do not distribute the country-wide market information. The information gathered from the 31 centers includes the number of car lots of the various perishables arriving, the States in which they originated, the demand, prevailing prices, market activity, and weather or other conditions likely to affect consumption.

Arrangements for furnishing information in regard to rail shipments of the various commodities reported by the service have been made with the division superintendents of practically all railroads operating in producing territory. Because these arrangements have proved so satisfactory the representatives of the Office of Markets and Rural Organization in the producing areas are relieved to a great extent of the necessity of making local arrangements for railroad reports and are able to devote their attention almost exclusively to the distribution of information to the producers.

One limitation which it has been necessary to place on the news service to make its operation practicable is that it shall deal only with car-lot shipments. Thus only areas producing a considerable volume of perishables are considered. This narrows the field down to an extent permitting efficient treatment, and at the same time allows the dissemination of information as to all movements of perishables likely to affect the markets materially.

Assembling and Distributing Information.

The information from each correspondent in regard to car-lot shipments and the situation in specific markets is telegraphed directly to Washington, where the Office of Markets and Rural Organization has fitted up a complete telegraph room, and receives its messages through its own operators. Every night during the season for marketing perishables the division superintendents of railways throughout the country file telegrams giving the number of car lots started for market from their divisions in the preceding 24 hours, the States in which the shipments originated, and their destinations. This constitutes the total information furnished by the common carriers for use in the general news reports, for it has been found impracticable under present conditions to issue complete statements of diversions made en route.

Reports on car-lot shipments of perishables begin arriving at the Washington headquarters of the news service shortly after 7 o'clock each morning. They are in code to reduce telegraphic expense. A group of clerks decodes the messages and compiles the data they contain. This work is completed by 9 o'clock, and the information is

sent out immediately by the office operators to groups of market and field agents connected on telegraphic circuits. These messages to the official agents and correspondents are sent at Government expense. Where the information is telegraphed to individuals and associations, however, the recipients pay the tolls.

As soon as the shipping information has been sent out messages begin arriving in the Office of Markets and Rural Organization giving the morning quotations and other information from the 31 markets covered by the news service. These messages are decoded and the information contained in them is tabulated and sent out early in the afternoon to the market correspondents and the representatives of the office in the producing sections. Like the shipping data, this information is telegraphed directly to interested individuals and associations willing to pay the tolls.

How the News is Distributed.

Few individuals or private agencies have cared to pay telegraphic tolls on the market information from Washington, but by the plan of distribution from field stations and branches the Office of Markets and Rural Organization has made it possible for the vast majority of those desiring the information to receive it while it is fresh. To begin with, the office of each employee of the service at market points or in the producing regions, as well as the Washington office, is a source from which anyone may receive the daily market information in full on application. All of the field stations are provided with facilities for rapidly multiplying typed copies of the information as soon as it arrives by wire from Washington. Some of these copies are furnished to applicants who call personally, while others are mailed to interested applicants in the surrounding territory, reaching them in most cases in a few hours. Copies also are made available at Washington and the field stations to national press associations and local papers, in an attempt to give as wide publicity as possible to the market information. Among the additional classes of persons and organizations reached by these notices are producers, producers' associations, buyers, wholesalers, jobbers, retailers, transportation agents, and agricultural agents. In addition, copies are placed by the agents on bulletin boards, where they may be consulted by anyone.

Work in Producing Areas.

The market forces in operation are traced even more closely by some of the field agents of the news service, especially those stationed in regions practically without competition for their commodities for a portion of the season. All field agents receive duplicates of the telegrams sent to Washington by the superintendents of the railroad divisions covering their regions, and are, therefore, informed as to local shipments before receiving the first telegram from the central office. Some of these agents also arrange with shippers to be kept informed as to diversions of cars from their territory so that the cars en route daily to the different markets may be known. This information is made public locally and in many instances leads to additional changes which avoid gluts and yet keep the various markets well supplied.

Results Obtained by the Service.

The market news service is being found useful in various ways by parties to marketing transactions. Producers and producers' associations shipping to outside markets need no longer guess at conditions or maintain at great expense agents in marketing points to make reports. If conditions in an apparently favorable market alter while commodities are en route there, the shipper usually may be informed of the change through the service in time to divert his car to a market which the same report shows to be more favorable. Producers, on the other hand, who sell to buyers at the nearest shipping point may be accurately informed as to market quotations, and if reasonable prices are not offered often may make shipping arrangements. Dealers, through the same service, may keep informed as to supplies on the way to their markets and may take steps to keep the supply normal. Knowing the arrivals at other markets, they also may assist in maintaining normal conditions by finding outlets for their surpluses, or sources of supply in cases of shortage. The effect of the service in general on all phases of marketing, according to reports from producers, transportation agencies, and dealers has been the creation of a tendency toward greater stabilization.

STORING CORN CROP.

(*Continued from page 1.*)

quantities of grain should not be left in the cribs during the summer, as they tend to harbor these pests. Where insects are destructive to the stored grain, it is a good practice to dispose of the entire crop as early as possible and clean the cribs thoroughly, so that there are left few hiding places and no food to carry the insects through the summer. In southern localities, where the weather is warm enough to permit these pests to work throughout the entire year, it is best to construct the cribs so that they can be made practically air-tight and then to treat the crop with some insecticide such as carbon bisulphid. If this plan were thoroughly carried out the corn weevil could be practically exterminated.

As a protection against rats, mice, and sparrows, galvanized wire cribs are coming into use. Wire netting of about one-fourth inch mesh can also be successfully used in the construction of frame corncribs. This wire netting can be tacked to the inside of the uprights of the crib, and the strips which constitute the sides of the crib can also be nailed on the inside of the uprights, thus holding the wire netting in place. As a floor, which should be 18 inches or more from the ground, so as not to afford a hiding place for rats, the wire netting can be tacked to the sleepers and the flooring nailed over to hold the wire in place. For overhead protection the wire netting is simply tacked to the joists.

If cribs are built upon solid concrete foundations through which rats can not burrow no netting will be needed for the floor, and the structure can be kept near the ground. With ample roof projection and upper ventilation no danger from dampness need be feared.

Shrinkage.

The shrinkage that will take place in a crib of corn from the time it is cribbed in the fall until it is sold varies so greatly in accordance with the amount of moisture the corn contains when placed in the crib, and also the ventilation of the crib, that it is impossible to state a percentage of shrinkage that will apply with certainty to any particular crib of stored corn. Various tests show that the shrinkage in cribbed corn approximates 15 per cent for the first year and 20 per cent for two years.

Corn that has not been kept dry during the winter is usually disposed of in early spring, for the reason that it is likely to spoil upon the approach of warm weather.

The people of Texas have broken all records by carrying out, both in July and August, more dippings to eradicate cattle tick than have been performed by any other State in a single month. The department's field reports from Texas show for July 760,846 dippings and for August 740,751 dippings under Federal or State supervision. The reports from the field indicate that cattle dipping is being systematically carried out in this State in a larger number of counties than ever before.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

IMPROVE FARM BUTTER.

Better Methods of Handling Milk and Cream Will Insure Superior Product, Say Dairy Specialists.

The adoption of more careful methods of handling milk and cream and improved practices in the making of farm butter will reduce rather than increase the trouble incident to home production of this food, say dairy specialists of the department, and will result in a superior product which can be sold more easily and for a better price than the average farm butter. Last year about 30,000,000 pounds of butter, much of which originated on the farm, was washed or renovated because it was of such poor quality that it could not be profitably offered on the regular butter markets.

Churn Cream Only.

Cream alone should be churned. It may be skimmed as soon as it rises or may be separated by a mechanical separator. The latter plan is the more efficient, and though requiring a considerable initial outlay often will be profitable. The cream should be set aside in a clean place by separate milkings. A temperature of 50° F. or lower should be maintained until from 12 to 18 hours before churning time, when the various batches should be stirred together well and brought to a temperature of about 70° F. by placing the container in a bucket of warm water. One of the first acts of the farm housewife who decides to adopt improved methods should be to purchase a dairy thermometer. Temperatures play an important part in the development of flavors in butter, and always should be determined with fair accuracy. After the cream is mixed it should be kept at approximately 70° F. until just before churning time, when it should be reduced to about 58° F., where this is possible (or to such temperature not above 65° F. as to complete the operation of churning within 25 or 30 minutes).

Churning.

The barrel type has been found by dairy specialists to be one of the most satisfactory churns. The dasher or plunger type requires a somewhat greater expenditure of labor. Earthenware churns are especially undesirable unless perfectly glazed, since if pores are exposed they absorb milk and cream which later decay. Churns with mechanical devices inside them are difficult to clean and sometimes injure the body of the butter.

The churn should be scalded preparatory to churning, but should be cooled with water before the cream is placed inside. The cream should be poured in through a coarse strainer. Every few minutes during the early part of the churning gas should be allowed to escape from the churn. If the temperature is right the churning should require about 25 or 30 minutes. The process is completed when the granules of butter are about the size of large wheat kernels. The buttermilk should then be drained off and the butter granules repeatedly washed with cold water while still in the churn. The washings should be continued until all milk is removed. Under no circumstances should working be depended on to remove surplus milk.

Working and Packing.

When the butter is free from all milk it should be taken from the churn with a paddle and placed on a worker. The hands should never touch the butter, both on account of sanitary reasons and because the body warmth may melt the fat. The working should be done carefully to avoid making the butter greasy. Before the butter is worked, fine salt should be added at the rate of about an ounce per pound of fat.

The butter should be prepared for market in a rectangular mold, since, when in this shape, the product is more easily wrapped and handled and is more pleasing to customers. Regular parchment butter-wrapping paper should be used around the prints, as ordinary waxed paper tears easily and sticks to the butter. The placing of the wrapped prints in pasteboard boxes is a desirable final step, as it protects the package, gives it a better appearance, and permits the use of the maker's name or trademark as an advertisement.

After the butter-making operations are completed the churn should be rinsed carefully with warm water. It should then be scrubbed with hot water, cleansing powder, and a fiber brush, and finally should be scalded and set in a clean, sunny place to drain and dry.

SHORT-TIME FARM LOANS.

Personal Characteristics and Business Ability of Borrower Considered by Banker.

Department Bulletin No. 409, Factors Affecting Interest Rates and Other Charges on Short-Time Farm Loans, by C. W. Thompson, specialist in rural organization, gives the following discussion of the bearing that the borrower's personal characteristics have on his ability to obtain short-time loans on satisfactory terms:

"The borrower who is known to be a man of honesty and integrity and who shows ability and judgment in the conduct of his farm business will ordinarily command the confidence of his banker and obtain credit on terms relatively favorable for his class of loans, whereas the individual who is uncertain in his personal character, erratic in his judgment, and irregular in his business habits will be considered a less desirable risk and, if he obtains a loan at all, usually must pay a higher rate of interest. In any case, if credit is to be extended wisely, it is just as important to discourage its use among those who can not be trusted as it is to grant credit to trustworthy borrowers who will use the borrowed money profitably and repay it promptly.

"Oftentimes the borrower may be honest and upright in his intentions, but may fail to appreciate the importance of being prompt in meeting his obligations. Possibly he thinks that a few days after the date of maturity is soon enough to make payment, and that a little delay is unimportant. He may not stop to consider that extra work and expense are involved when notice must be given of overdue paper, or that bank examiners do not take kindly to notes that are overdue.

"Again, the business ability and business habits of the farmer are tested when the banker asks for a statement of the borrower's business. This information is needed by the banker as a basis for intelligent rating. If the borrower is in the habit of keeping accounts and can explain the nature of his resources and liabilities and thus indicate accurately his financial standing, the wisdom of granting a desired loan as well as the proper terms thereon readily can be determined. On the other hand, if this information is lacking and the banker is in doubt about the safety of a particular loan, he is likely to charge up his uncertainty to the borrower's account in the form of a higher rate of interest.

"The requirement that a borrower shall submit a statement of his business is being applied by bankers in their dealings with merchants and manufacturers. Accordingly, business men in general have become more or less familiar with this requirement, and are prepared to furnish such a statement whenever it is called for. Some bankers, in inaugurating a similar plan in connection with their farm-loan business, are supplying farmers with especially prepared blanks, or rate sheets, on which the farmers furnish the desired information."

The next to the largest number of cattle dippings ever made for cattle tick in any one month in any State were carried out in Mississippi in August of this year. In that time the people of Mississippi, who apparently are not delaying tick eradication until their recently passed State dipping law becomes compulsory on January 1, had provided 1,056 dipping vats, an increase of 35 over the number in operation in July, according to field reports received by the department. In these vats there were 705,424 supervised dippings of cattle, or an increase of 15,000 over the dippings carried out in July.

SHEEP IN NEW ENGLAND.

Good Profit Shown in Year's Account with a Flock on Government Horse Farm in Vermont.

An average of $10.47 per ewe was the gross income from a New England farm flock of sheep last year. Charging all feed at full market prices, there remained a net profit of $1.60 per ewe. The flock consisted of 51 ewes and 2 rams, kept at the Bureau of Animal Industry's Morgan Horse Farm, at Middlebury, Vt. The figures given cover the period from August 1, 1915, to August 1, 1916. The 1st of August was used to mark the beginning and end of the year, because it is the latest time at which farm lambs should be marketed and the old ewes culled out and disposed of to put the flock in shape for the fall breeding. The ewes in the flock were all registered Southdowns. The feed and attention given them was better than that commonly given farm flocks, but not better than it is profitable to furnish.

The income includes receipts from actual sale of wool and the actual market value of the lambs in July. The lambs were retained for sale and use for breeding purposes, and their value was credited to the account at 10 cents per pound, live weight, at the farm. This figure was offered by a livestock shipper when lambs of the same class were selling in eastern markets at 11.5 cents per pound, live weight.

In August, 1915, the breeding ewes ran part of the time on small lots of rape that had been seeded for the lambs of that spring. Breeding commenced September 10 with 51 ewes. From this time until winter the ewes ran in two grass fields. One of these fields contained 8 acres and was used exclusively for sheep. The other field was a 60-acre horse pasture. At times all of the ewes were in this field, and at other times there were no sheep on it. The horses were not removed during the grazing season. On a fair estimate the sheep are charged with one-third the use of this pasture. The grazing, however, was materially improved through the killing of weeds eaten by the sheep but not touched by the horses.

The ewes were fed in the barn from December 1 to April 30. During the winter before lambing they received about 3 pounds of hay, 1 pound of roots, and one-half pound of grain each per day. This amount of grain and roots was considerably more than would be required with a good supply of clover hay. The hay used was of low grade, and not all of the 3 pounds per day placed in the racks was eaten. After lambing, the ewes were fed three-fourths of a pound of grain and 2 pounds of roots daily until turned to pasture, May 1.

Of the 51 ewes bred, 49 dropped lambs. There were 59 lambs on hand August 1. No ewes died during the year, and the 51 head of ewes and 2 rams sheared 329.5 pounds of wool, which sold at 38 cents per pound.

No ewe lambs were carried over to add to the flock and no old ewes were disposed of. When ewe lambs are kept to replace old ewes their value is offset by the sale of the old stock, and in this year the value of their fleeces would nearly have equaled the cost of wintering them.

The young lambs were allowed the run of separate small pens which the ewes could not enter. Grain was kept in troughs in these pens and the lambs started eating when about 2 weeks old. Until April 30 they were given what they would eat, which was at the most one-half pound a day. During the 3 months on pasture the twin lambs ate 0.7 pound each per day and the single ones one-half pound each per day.

On August 1 the average weight of the 59 lambs was 72.9 pounds. The total returns were as follows:

Lambs, 4,301 pounds, at 10 cents	$430.10
Wool, 329.5 pounds, at 38 cents	125.21
Total	555.31

The feeds used were as follows:

Feeds.	For ewes and rams.	For lambs.	Total.
Hay.....tons..	12.1	.....	12.1
Grass pasture.....acres..	28	.....	28
Forage crops.....do....	1	1	2
Corn.....bushels..	47.3	43.6	90.9
Oats.....do....	63	.....	63
Bran.....pounds..	1,548	1,294.6	2,842.6
Roots.....tons..	8.85	0.336	9.186
Linseed meal.....pounds..	518	640.3	1,158.3

The amount of actual net profit depends upon the method of calculation. The figures given above, which include all expense and receipts except labor and manure, can be used as a basis of calculating cost or net profit under any system that may be preferred. The value of manure and the improvement of grass pastures through keeping down weeds will fully offset the cost of labor required for a New England farm flock. During the winter of 1915–16 the following prices were current in the country in which this flock is maintained: Hay, $14 per ton; corn, 90 cents per bushel; oats, 60 cents per bushel; bran, $28 per ton; linseed meal, $40 per ton. Pasture land rents up to $2.50 per acre. Forage-crop land may be considered as costing $7.35 per acre ($3.60 per acre for the land and $3.75 for seeding). Roots are considered to have a value of $4 per ton.

If all feeds used are charged to the flock at the foregoing prices there is left a net balance of $81.76, which is 15.4 per cent interest on the ewes valued at $10 each.

By another method the flock may be considered as a means of utilizing the feeds usually marketed. By this method charges may first be made at the rates mentioned above for the pasture grasses, forage crops, bran, oil meal, and roots, the materials for which there is little or no sale or which must be bought. A balance of $370.87 is then left. If this is applied as though it were used to purchase the remaining feeds, it would be sufficient to yield a return at the farm of $17.96 per ton for the hay fed, $1.15 per bushel for the corn, and 77 cents per bushel for the oats—a price materially greater than could have been obtained by selling the products.

By using a better quality of hay than was used in this case, and by substituting silage for roots, a greater margin of profit would be insured. This year's prices for lambs and wool may not continue, but there is a fair prospect of their doing so. If careful attention is given to producing a high grade of both lambs and wool the tended flock will always furnish a good home market for farm feeds, and at the same time improve the condition of their pastures.

SWEETS FOR SCHOOL LUNCH.

Directions for Preparing Nutritious Desserts Suitable for Children.

The following suggestions for desirable sweets or simple desserts for children are taken from Farmers' Bulletin 712, School Lunches:

Fruit and Nut Confection.

1 pound figs.
1 pound dried prunes or seedless raisins.
1 pound nut meats.
Confectioners' sugar.

Provides twenty-four 2-ounce portions.

Wash, pick over, and stem the fruits and put them with the nut meats through a meat chopper, and mix thoroughly. Roll out to a thickness of about one-half inch on a board dredged with confectioners' sugar, and cut into small pieces. If this candy is to be kept for some time, the pieces should be separated by means of paraffin paper.

This confection, in addition to being nutritious and well liked by children, has some value in preventing constipation.

Candied Fruit Peel.

The candied peel of oranges, grapefruit, kumquats, and other citrus fruits makes a good sweet which is economical because it utilizes materials which might otherwise be thrown away. Its preparation makes an interesting school exercise. The skins can be kept in good condition for a long time in salt water, which makes it possible to wait until a large supply is on hand before candy-

ing them. The salt water takes out some of the bitter taste. The skins should be washed in clear water after removal from the salt water, boiled until tender, cut into small pieces, and then boiled in a thick sugar sirup until they are transparent. They should then be lifted from the sirup and allowed to cool in such a way that superfluous sirup will run off. Finally they should be rolled in pulverized or fine granulated sugar.

Boiled Custard.

2 cups hot milk.	Speck salt.
3 egg yolks.	Flavoring.
¼ cup sugar.	

Beat the yolks slightly and add the sugar and salt. Pour the hot milk over this mixture, stirring constantly. Cook in a double boiler, stirring until the mixture thickens and will form a coating on the spoon. Cool and flavor. If the custard curdles, beat with a Dover egg beater.

If the whites of the eggs are to be used, beat them very stiff and add three tablespoons of powdered sugar. Place by spoonsfuls on water which is hot but not boiling. Cover the dish. Test occasionally by putting a knife into it; when it is done nothing will stick to the knife. Remove from the water with a wire egg beater or split spoon and place on top of the custard.

PRICES OF MEAT ANIMALS.

Averages Based on Reports of Several Thousand Correspondents.

The prices of meat animals—hogs, cattle, sheep, and chickens—to producers of the United States increased 4.1 per cent from August 15 to September 15; in the past six years prices increased in like period 0.9 per cent. On September 15 the index figure of prices for these meat animals was about 23.7 per cent higher than a year ago, 10.5 per cent higher than two years ago, and 22.5 per cent higher than the average of the past six years on September 15.

The price of hogs on September 15 averaged for the United States $9.22 per 100 pounds, compared with $8.61 a month before, $6.79 a year ago, and $7.48, the average September 15 price of the past six years.

Beef cattle averaged $6.55 per 100 pounds, compared with $6.51 a month ago, $6.06 a year ago, and $5.46, the average September 15 price of the past six years.

Sheep averaged $6.25 per 100 pounds, compared with $6.22 a month before, $5.06 a year ago, and $4.49, the average September 15 price of the past six years.

These averages are based upon reports of several thousand correspondents of the Bureau of Crop Estimates of the department.

PLANTING ROSES.

Under Favorable Climatic Conditions, Dormant Plants Should Be Set Out in the Fall.

In deciding the time to plant roses, say specialists of the department, the gardener must take into consideration the kind of plant, the location, and to a certain extent, the season. The roses may be obtained either as dormant or potted plants. It is best to use the former and plant in the fall in those sections where the temperature does not fall below 10° F., where the winter winds are not exceptionally drying, and where the soil has been so prepared that it does not heave badly. In other places spring planting with potted plants is best.

Stock should be planted as soon as possible after it arrives. When it is impossible to plant immediately, the plants should be placed in a trench and the roots covered. If the plant roots are dry when received, soaking them in water an hour or more before this heeling-in is done is desirable. If the stems are shriveled, plumpness may be restored and growth insured by burying the whole plant for a few days. If the plants are frozen when received, they should be placed where they will thaw gradually and should not be unpacked until there is no question that the frost is out.

More plants are killed by undue exposure of roots at planting time than from any other cause. No matter how short the distance to the permanent planting location, plants should be taken there with the roots thoroughly covered. The roots may be placed in a bucket of water while removing to the planting ground and until planting, or they may be puddled in a mixture of thin clay and then kept covered with wet burlap or other protection. Care should be taken that the clay does not become dry before planting. It is important to set the plants a little deeper than they were before. If planted too deep, however, the bark of the buried stems would be injured and growth would be checked until new roots form nearer the surface.

In planting dormant bushes it is desirable to trim the ends of broken roots and any that are too long just before they are put into the hole, so that there will be smooth, fresh surfaces which can callus and heal over. It is usual to have this fresh-cut surface on the under side of the root. The hole in which the bush is to be planted should be several inches larger across than the roots will extend and ample in depth, with a little loose earth on the bottom. The roots should be separated well in all directions, with the soil well worked in among them, separating them into layers, each of which should be spread out like the fingers of the hand. When the hole is partially full, the plant should be shaken up and down so as to make sure it is in close contact with the soil under the crown where the roots branch. When the roots are well covered the soil should be firmed. This is best done by tramping. If the soil is in proper condition tramping can not injure the plants. This will leave a depression about them, but all the roots will be covered.

When all are planted, each one may be watered, although this usually is not necessary, especially if the roots have been puddled before planting. If water is applied, permit it to soak in about the roots and then fill the hole with dry earth. Do not tramp after watering. With the soil wet it would be injurious to compact it more. If not watered the depression should be filled with loose earth the same as though it had been watered. After planting, no watering should be done unless very dry weather follows, and even then care must be exercised not to overdo it till after growth starts. In watering, it is desirable to draw away some earth from about the bush, apply the water, and after it has soaked in draw dry earth about the plant again.

If budded or grafted roses are used they must be planted deeper than own-rooted roses would be; because of the liability of shoots starting from the stock below the scion, the point of union between the stock and scion should be planted 3 inches under the ground. By planting in this way the scion will have an opportunity to form roots from the part of the stem in the ground and thus become at least partially own rooted. Planting the stock so deeply discourages the formation of new shoots from it. If any appear they must be removed at once.

Potted plants, as opposed to the dormant sort, should be set out only in the spring after the maples come to leaf, or not over two weeks before the oaks come into leaf. With potted plants, no root pruning is necessary, as any pruning required should have been done at the time of potting. Where the roses are small and suited to the size of the pot, the balls of earth are planted with the top half an inch or so below the surface. The soil is compacted about the ball without breaking it. These roses are watered in the same way as dormant plants.

Field-grown plants, especially the larger sizes, usually have long roots which are doubled up when placed in a pot. In planting them in a garden the roots should be straightened out, but great care should be taken in this process not to disturb unduly the soil adhering to the roots. By having the ball of earth quite wet, its breakage does not cause the complete dropping away of the soil when it is disturbed for the purpose of spreading the roots. Good earth must be well compacted about these soil-

covered roots, and the whole should be watered and dry soil put about the plants after the water has soaked away.

Hybrid perpetual roses should be set from 2 to 3 feet apart, depending on the vigor of growth and the locality. When the greatest mass of bloom is wanted the vigorous ones had better be 3 feet apart. When used in the South they should be slightly farther apart, but because most of them bloom only once during the season, or at most only in the spring and fall, they are neglected there in favor of kinds more desirable for the region.

Tea roses should be planted from 18 to 30 inches apart, depending on the vigor of growth and proposed treatment.

The hybrid tea roses have a greater range of character of growth even than the other kinds discussed, and the proper distance for planting corresponds. The planting distance is from 20 inches to 3 feet, being greatest in the warmer regions where they get an abundance of water and least where they are retarded in growth by cold winters or dry summers.

The China and Bourbon roses should be planted about as far apart as the hybrid perpetuals.

ACCOUNTING METHODS.

Department Bulletin Outlines Special System Adapted to Cooperative Stores.

To assist those interested in cooperative stores to introduce satisfactory bookkeeping methods, the Office of Markets and Rural Organization has just published Department Bulletin No. 381, A System of Records and Accounts for Cooperative Stores. This bulletin does not purport to be a treatise on the principles of bookkeeping, but merely outlines a special system adapted to a cooperative business. While prepared primarily for cooperative stores, the bulletin should be of interest and value to other retail merchandise stores desiring to improve their bookkeeping methods. It is taken for granted that no corporation will engage in such a business without employing a competent bookkeeper. The importance of a proper system of accounts for such enterprises is indicated by the following extracts from the bulletin:

"In a large percentage of business failures the cause can be traced directly to defective methods of analyzing the business by means of carefully kept records. No business can hope to succeed unless its condition is kept constantly before the management in the form of comparative statistics upon which future operations may be based.

"It is impossible to exaggerate the importance of selecting a proper system of accounts. By 'system' is meant not a disconnected mass of notes and memoranda but a scientific analysis of the business. Nor should the value of standardization of accounts be overlooked. One of the greatest arguments in favor of adopting a uniform system of accounts is to enable managers to draw comparisons between theirs and other stores and groups of stores.

"The only essential difference between accounting for cooperative and other retail stores lies in the fact that the former are semipublic institutions, while the latter are private enterprises. In the cooperative store the working capital is contributed by a large number of persons, who are entitled to regular reports. The business is managed by a board of directors, which requires constant information concerning the conduct of the business. The law creating the association prescribes certain methods of publicity. Moreover, the accounting for cooperative associations is complicated by the fact that the net earnings are usually distributed to patrons, frequently to both members and nonmembers, in proportion to their purchases from the store."

A NORMAL DAY'S FARM WORK.

Data for Implements, Workmen, and Crews in Western New York.

The experience of several hundred New York farmers as to what constitutes a fair day's work in ordinary farm operations has been made the basis of a bulletin, entitled "The Normal Day's Work of Farm Implements, Workmen, and Crews in Western New York," just published by the department as No. 412 of the departmental series.

The averages derived from the estimates furnished by these farmers serve to establish a fairly definite standard of performance for conditions such as those which prevail in western New York. As compared with averages for the entire United States, determined by a previous study, certain of these averages serve to throw significant sidelights on the methods in vogue and the results secured in the New York area, where the soil is comparatively heavy. For example, it was found that the average day's work of the two-horse, 12-inch walking plow in western New York was 1.65 acres, while that of the three-horse, 14-inch plow was but 1.78 acres, as against 1.76 and 2.32 acres, respectively, for the entire country. On the other hand, it was found that in the use of all harrows except the four-horse, 8-foot disk, the western New York average is higher than that of the country as a whole.

The following table summarizes the results of the study, showing western New York averages in comparison with those for the entire United States:

Comparison of averages.

Operation.	Daily duty.	
	Western New York average.	United States average.
Walking plow:	*Acres.*	*Acres.*
2 horses, 12-inch	1.65	1.76
3 horses, 14-inch	1.78	2.32
Sulky plow, 3 horses, 14-inch	2.20	2.40
Spike-tooth harrow:		
2 horses, 8-foot	13.0	10.8
3 horses, 10-foot	17.3	15.3
Spring-tooth harrow:		
2 horses, 6-foot	9.0	7.4
3 horses, 6-foot	10.2	8.2
4 horses, 8-foot	14.7	13.1
Disk harrow, fresh plowed land:		
2 horses, 6-foot	7.5	7.2
3 horses, 6-foot	8.2	7.5
4 horses, 8-foot	11.1	12.8
Land roller, 2 horses, 8-foot	13.8	13.2
Grain drill, 2 horses, 6-foot	10.0	8.8
Grain binder, 3 horses, 6-foot	10.4	11.1
Setting up bound grain, 1 man	7.5	9.3
Planting corn:		
Hand planter, 1 man	3.4	4.4
1-horse, 1-row	5.2	6.9
2-horse, 2-row	10.7	13.6
Cultivating:		
1-horse	4.1	4.4
2-horse	6.8	6.6
Cutting corn by hand, 1 man, yield 41–60 bushels	1.1	1.5
Setting up corn after corn binder, 1 man	3.4	4.0
Corn binder:		
2 horses	5.3	6.6
3 horses	5.7	7.3
Mowing hay (5-foot cut)	9.0	8.9
Raking hay (10 feet wide):		
1 horse	15.0	16.3
2 horses	17.6	17.9
Tedding hay, 2 horses	14.3	14.5
Cocking hay, 1 man	6.3	6.3
Hauling hay from field to barn, 2 men and 2 horses:		
Unloading by hand	4.9	4.4
Unloading with sling	6.6	6.1
Picking apples:	*Bushels.*	*Bushels.*
Yield 1 to 10 bushels	52.3	34.0
Yield over 10 bushels	70.0	44.8
Husking corn from shock, 1 man	32.2	45.9
Threshing wheat from shock, 10 men and 6 horses	715.3	679.0
	Acres.	*Acres.*
	25.1	29.5
	Loads.	*Loads.*
Hauling manure with spreader	14.7	13.1

WINTER CARE OF ROSES.

Special Protection Is Necessary in Northern Half of Country.

Cut-flower roses in the northern half of the country need winter protection. This may be provided by coarse manure, straw, or leaves applied after the preparatory pruning described below. Evergreen boughs, or even branches from deciduous plants, are often helpful in holding the other materials in place, besides being a protection in themselves. Individual specimens are often wrapped in straw or straw and burlap. There is some danger of trouble from mice in the use of straw and strawy manure, especially during hard winters. This is minimized by banking earth about the plants before mulching. This banking of earth is also a most effective preventive of injury from cold. Earth banked up about the plants to a height of a foot or more makes an excellent protection, especially if covered well with manure after the ground first

freezes. The earth cover must be promptly removed in early spring, as soon as danger from freezing is past. In some sections it is advisable to protect cut-flower rose plants from strong winds by shrubbery borders, evergreens, vine-covered fences, or other windbreaks.

Special Fall Pruning.

A special type of pruning should be practiced in fall in sections where winter protection is necessary. Under such circumstances it is desirable to cut back the tops in the fall to within 30 inches of the ground, to allow of more easily covering the bushes. This should be followed in the spring by the regular pruning. The long stems left in this fall pruning help hold the winter mulch from blowing away and from packing too closely. They are also long enough to allow considerable winter killing and yet have sufficient eyes left to insure ample growth for the next season's bloom.

Throughout large sections of the country it is unnecessary to protect climbing roses in winter. In the northern sections, where roses are apt to winter kill, however, some sort of protection is necessary. Wrapping the bushes in straw is effective where the cold is not too great, but is somewhat unsightly. It permits keeping the vines more nearly in their summer position. A surer method is to lay the vines down, covering them with earth, and after that is frozen adding a layer of straw or manure. This covering must be removed promptly in the spring as soon as freezing is over.

HANDLING CUT TIMBER.

Deterioration of Woodlot Products Can Be Largely Reduced by Proper Preventive Measures.

The following advice about how to prevent loss in woodlot products after the trees have been felled or the logs hewn is taken from Farmers' Bulletin 715, Measuring and Marketing Woodlot Products. This bulletin devotes 49 pages to methods of measuring trees and timber, estimating the value of timber in the woodlot, and practical suggestions whereby the farmer can know what he is doing when he disposes of his timber.

"In handling cut timber," the authors advise, "a good rule to follow is to allow as little delay as possible between the felling of the tree and its manufacture into rough products. This means that sales should be arranged for prior to beginning cutting. It is often necessary or desirable, however, to put off the delivery of logs, bolts, poles, etc., until some months after cutting, either in order to allow them to season or because a good sale can not be arranged at once. A great deal of the weight of freshly cut products is due to the water they contain, and a few months' seasoning will often reduce this to a marked degree, the amount of reduction depending, of course, on the climate, the weather, and the exposure to sun and air. At the same time, unless preventive measures are taken, the products are sure to deteriorate through decay, insect attack, checking, or some other agency. A certain amount of deterioration is apt to take place in any case if the delivery is put off for some time; but the amount can be greatly reduced by proper preventive measures.

"Logs and other round timber should never be allowed to remain long in the woods after cutting. As soon as possible they should be taken to a dry, well-aired, and unshaded area and placed on skids well off the ground; otherwise the opposite extreme should, if possible, be adopted, namely, of keeping the timber in water. Within a few days after the trees are felled the bark should be removed from poles, posts, and other material which will not be injured by checking or season cracks. The ends of logs should be coated with paint, creosote, or tar. This will not only assist in preventing decay, but will also retard seasoning to some extent and thus keep the logs from checking badly.

"Poles should be peeled, and hauled or dragged to a place free from débris or rank vegetation and freely exposed to sun and wind. They should then be rolled upon skidways not less than 18 inches high, so that no part of them will rest on the ground. There should be only one layer of poles on each skidway. When ties are cut, it is usually cheapest and most desirable to haul them, unseasoned, directly to the railroad.

"Cordwood should be stacked in loose piles in a sunny, well-aired, and well-drained place free from rank vegetation. Two sticks on the ground running the length of the pile will keep it from contact with the soil and thus prevent decay in the lower layers."

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Secretary of Agriculture, DAVID F. HOUSTON.
Executive and administrative head of the department.

Assistant Secretary of Agriculture, CARL VROOMAN.
Assists in directing the work of the department. In the absence of the Secretary becomes Acting Secretary.

Solicitor, FRANCIS G. CAFFEY.
Is legal adviser to the Secretary and the heads of the several branches of the department, conducts its legal work, and represents it in all legal matters.

Office of Farm Management, W. J. SPILLMAN, *Chief.*
Studies the details of farm practice from a business standpoint, with a view to determining the most efficient methods of operation.

Weather Bureau, CHAS. F. MARVIN, *Chief.*
Conducts meteorological investigations; issues weather maps; handles all work relating to climate, storm warnings, frost warnings, etc.

Forest Service, HENRY S. GRAVES, *Forester.*
Administers the national forests and develops use of their resources; directs all research work relating to forestry and forest utilization.

Bureau of Animal Industry, A. D. MELVIN, *Chief.*
Studies and gives information regarding live stock; conducts the meat-inspection and quarantine work.

Bureau of Plant Industry, WM. A. TAYLOR, *Chief.*
Investigates problems relating to plants and plant industries.

Bureau of Chemistry, CARL L. ALSBERG, *Chief.*
Enforces the Food and Drugs Act; investigates questions of agricultural chemistry.

Bureau of Soils, MILTON WHITNEY, *Chief.*
Surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Entomology, L. O. HOWARD, *Chief.*
Studies insects in their relation to agriculture.

Bureau of Biological Survey, HENRY W. HENSHAW, *Chief.*
Studies wild birds and animals, their distribution, habits, and relations to agriculture; administers the Federal bird and game reservations and the Federal laws protecting game and regulating the importation of birds and animals. Controls noxious mammals and experiments in fur farming.

Bureau of Crop Estimates, LEON M. ESTABROOK, *Chief.*
Collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Office of Public Roads and Rural Engineering, LOGAN WALLER PAGE, *Director.*
Studies and supplies information regarding road making, road management, road maintenance, farm irrigation; farm drainage, and rural engineering and architecture.

States Relations Service, A. C. TRUE, *Director.*
Supervises the use of Federal funds for agricultural experiment stations and agricultural extension work; investigates agricultural education, and food, dietetics, clothing, and household equipment and management.

Office of Markets and Rural Organization, CHARLES J. BRAND, *Chief.*
Investigates problems pertaining to marketing and distribution of farm products and organizing rural communities for marketing, rural credit, and other purposes. Enforces Cotton-Futures Act.

Federal Horticultural Board, C. L. MARLATT, *Chairman.*
Assists in the enforcement of the Plant Quarantine Act of August 20, 1912.

Insecticide and Fungicide Board, J. K. HAYWOOD, *Chairman.*
Assists in the enforcement of the Insecticide Act of 1910.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., OCTOBER 18, 1916. No. 11

HIGHWAY EXPENDITURES.

Increase of More Than 250 Per Cent in Total Outlay for Roads and Bridges in Past Twelve Years.

Rapid increase in total expenditures for roads and bridges, growth of building and maintenance activities under State supervision, and a sharp decrease in the proportion of contributions in the form of statute labor mark the development of highway work in the United States during the past 12 years. These facts are brought out by statistics for the calendar year 1915, recently compiled by the Office of Public Roads and Rural Engineering of the department.

The total length of public roads in the United States outside the limits of incorporated towns and cities was about 2,452,000 miles on January 1, 1916. Of this, about 277,000 miles, or 11.3 per cent, were improved with some form of surfacing. The mileage of surfaced roads has been increasing at the rate of about 16,000 miles a year, and in 1915 approximately one-half of this increase was made under the supervision of State highway departments. In addition, these departments supervised the maintenance of nearly 52,000 miles of main and trunk-line roads.

The increase in expenditures for road and bridge work in the United States has been from approximately $80,000,000 per year in 1904 to about $282,000,000 in 1915, an increase of more than 250 per cent. The expenditure of State funds during this same period increased from about $2,550,000 to more than $53,000,000. In addition, more than $27,000,000 of local funds was spent under State supervision in 1915, bringing the total road and bridge expenditures mananged by the States to $80,514,699. This amount is greater than the total expenditures for roads and bridges from all sources in 1904.

The growth in importance of the State highway departments has been rapid. The first of these agencies was created in 1891 in New Jersey, and now some form of highway department exists in every State except Indiana, South Carolina, and Texas. Since their inception these departments had expended to January 1, 1916, an aggregate of $265,350,825 in State funds for road and bridge construction, maintenance, and administration. They had constructed over 50,000 miles of roads in cooperation with the States. More than 40,000 miles of these roads were surfaced.

The falling off in the value of road work performed by statute and convict labor was from $20,000,000 in 1904, when the total road expenditures were $80,000,000, to about $15,000,000 in 1915, when the total expenditures had grown to $282,000,000. This was a reduction from 25 per cent of the total in the former year to less than 5½ per cent of the total in 1915.

An increase in the use of better and more expensive types of roads also is shown by the recently compiled statistics. This development has been due, in large part, to the great increase in automobile traffic. It is estimated that there are now approximately two and one-half million automobiles in use on the roads of the country, or one car for every mile of road. This present motor traffic is in excess of traffic of all sorts 12 years ago.

The cash road and bridge expenditures of the United States averaged only $28 per mile of rural roads in 1904. In 1915 this average had grown to $109 per mile. New Jersey led all other States, both in 1904 and in 1915, with $221 and $475 per mile, respectively. Nevada made the least expenditure in both years—$3.72 per mile in 1904 and $17 per mile in 1915.

WATCH FOR BANDS ON WILD DUCKS.

If you kill or capture a wild duck bearing an aluminum band around one leg, having a number on one side, and on the other a statement requesting that the United States Department of Agriculture, or the Biological Survey, be notified, you are requested to send this band at once to the Bureau of Biological Survey, Department of Agriculture, Washington, D. C. This band, if accompanied by a statement as to date, place, and circumstances under which the bird was taken, will be of service to the Survey in its efforts to determine the longevity of individual ducks and the routes of migration of the species. The bands are being attached to considerable numbers of wild duck of several species which have been cured of the duck sickness prevalent around Great Salt Lake, Utah, and there released. The department is particularly anxious to secure reports from these birds to determine their complete recovery from this malady which has killed hundreds of thousands of ducks in Utah.

MARKETING PERISHABLES

Department Gives Special Attention to Problems in Distribution of Perishable Fruits and Vegetables.

In no other portion of the marketing field has the Office of Markets and Rural Organization of the department found greater need for its studies and activities than in the marketing of perishable fruits and vegetables. With these easily damaged farm products extreme care in handling and speedy movement are essential at every stage of progress from producer to consumer. These requirements bring difficulties not encountered in the distribution of the more staple crops. Long hauls and refrigeration also are often necessary, and in some cases the products must be placed in cold storage. These factors add still further to the peculiar difficulty in the case of perishables of fulfilling the primary needs of efficient marketing—to place the products on the market at an advantageous time, in good condition, and under circumstances which will make their sale profitable to the producer.

As now organized, the production of perishable fruits and vegetables is a highly specialized agricultural industry. It is concentrated to a large extent in certain localities, but is conducted predominantly on a small-scale basis. Many of the regions devoted especially to trucking and fruit growing are situated far from market points. The industry in this specialized form came into existence when the growth of great cities necessitated the drawing of perishable food supplies from greater areas than the zone of farms in the immediate vicinity and when the extension of railroads made utilization of this greater area possible. Coupled with these two forces, making for the specialization and extension of truck and fruit growing in regions remote from market, has been a marked change in demand. With the growth of prosperity there has come an ever-increasing desire for food luxuries, and this has often taken the form of a demand for out-of-season fruits and vegetables. As a result, producing areas for perishables have been pushed into the extreme South and Southwest.

Since the growth of cities and railroads laid the foundation for the specialized production of fruits and vegetables for market, these commodities have occupied a place of

growing importance on the American market until of the approximately 100 million tons of farm produce shipped by rail annually about 20 million tons belong to the perishable class. Among the farm products entering commerce by rail only the weighty grains now surpass the perishables in tonnage.

Fundamental Problems.

The problems in the marketing of this vast amount of perishables begin, as do most marketing problems, with production. The variety of the fruit or vegetable grown and the amount of this variety available often are important factors in shaping market demand and prices. The quality of the product, as influenced by choice of soils, fertilizers, and cultural methods, is another important consideration affecting marketing success.

Since the growing of perishable fruits and vegetables is on a relatively small-scale basis, while the large aggregate demands of the great market centers have brought about the existence of dealers who handle such produce only in large lots, the questions of production which later influence marketing can be dealt with satisfactorily in most cases only on a community basis. This fact and the recognition that many other problems in the marketing of perishables could be met satisfactorily only by steps which would give the small-scale activities of the producers some of the advantages of large-scale operations, led the Office of Markets and Rural Organization early in its work to advocate the cooperative organization of growers wherever conditions were favorable. The needs for cooperative organization proved so fundamental when the office started its investigations that it was found possible to approach many of the general marketing problems through the organization work. In dealing with the cooperative organization phase of its investigations the Office has made intensive studies of numerous existing associations, analyzing their good and bad points. It has published a number of bulletins dealing with these questions and suggesting desirable forms of constitutions and by-laws, business methods, and activities that may be undertaken profitably.

Preparation for Shipment.

In addition to the marketing problems having their roots in production, many other perplexities concerned with distribution face the growers of perishables. Perhaps the most serious losses encountered are traceable to improper handling after the fruits or vegetables are ready to harvest for market. By faulty picking alone thousands of dollars are lost annually in nearly every community producing perishables for the market. The employment of careless, unskilled laborers, or the payment of harvesters on the basis of amount picked, often is a contributing factor. The products are handled roughly and the outer covering of many individual specimens is broken or bruised, making for ease of decay on the way to market.

Careful grading of the harvested products is essential if they are to make a good appearance on the markets and are to secure a reasonable price. By failure properly to grade—that is, to cull out all bruised, diseased, and inferior products and to assemble the remainder according to size and quality—many producers add still further to the difficulty of marketing their commodities profitably and in many cases bring about serious losses.

Packing is usually the final step to be taken by the producer in preparation for shipment, and here also producers of perishables in many instances incur needless losses by their failure to perform the necessary action with proper care. Faulty packing may cause losses by permitting the fruits or vegetables to spill out of the containers or become damaged, or by producing such an unattractive appearance in the market that a good price can not be obtained. Not the least of the problems in connection with the packing of perishables is selection of containers of the proper type and dimensions which will give adequate protection and a desirable appearance to the commodities and at the same time will not be too costly.

Though packing in most cases completes the work of the producer preparatory to shipping, investigations of the department have demonstrated that there is another step that can be taken with profit when certain valuable products are to be shipped under refrigeration for long distances. This is the precooling of the packed fruits or vegetables by blasts of very cold air immediately before or just after they have been placed in the refrigerator cars. When perishables at their normal temperature are stowed in a refrigerator car under ordinary conditions, the limited quantity of ice used is unable to chill the products for several days. The result is that during this period the products continue to ripen and in many cases begin to decay before a low enough temperature is reached to prevent such deterioration. When precooling is practiced, this highly dangerous period is shortened, the fruit reaching a low temperature more rapidly. Precooling obviously can not be practiced by small-scale individual shippers, but would be profitable in many cases to cooperative associations. It has proved particularly valuable to such associations in the shipment of oranges from California across the continent.

Solving Problems of Preparation.

While individual producers of perishable fruits and vegetables often may improve with some profit their own methods of preparing commodities for market, especially in the case of crops the production of which is highly specialized, probably the most valuable improvements to the industry as a whole will come through standardization which will make the betterments uniform over units of considerable extent, if not throughout the country. Conditions surrounding the modern marketing of perishable fruits and vegetables make especially desirable the standardization of output, supplies, equipment, and operating methods. Orders for produce often are placed when great distances separate buyer and seller or when for other reasons it is impossible for the purchaser to see the commodities. Since the purchaser must then rely on name and description of grades as indications of size and quality, fair dealing and the satisfaction of customers will be promoted by the use of terms having definite, generally understood meanings.

Standardization of containers also is desirable, since commodities often are offered by the crate or box; and unless these terms mean a definite amount, confusion and loss will occur frequently. Information which may be obtained as to the amounts of different qualities of a certain product on the market also can not be accurate so long as quality and quantity terms vary in meaning with localities. While such inaccuracy continues to exist the data on which prices must be estimated will be untrustworthy.

Standardization in grading and packing would reduce loss from decay by excluding punctured and bruised products from contact with sound ones and by affording better protection. Regrading at market points, now very often a necessary and expensive step, also could be done away with largely if standardization was generally in effect.

Results of Standardization in Specific Industries.

The advantages to be gained from standardized handling, grading, and packing are shown strikingly by results obtained in the California citrus industry. Large losses took place on almost every shipment to eastern markets in the earliest days of the industry, when practically all activities were on an individualistic basis. Many such losses were due to transportation defects, but it became recognized that an appreciable part of the trouble arose from the failure to grade and pack the fruit properly. Cooperative organizations arose and carried on this grading and packing work to a considerable extent. Losses were materially reduced, but not to the point felt to be desirable. Investigations begun by the department shortly after 1900 disclosed the fact that careless picking was chiefly responsible for the remaining losses. Picking, as well as grading and packing, was then standardized practically throughout the industry and losses were brought down to a very satisfactory minimum.

Recent investigations by the Office of Markets and Rural Organization of the can-

taloupe-growing industry have shown the need for standardization in the handling of this product also. Losses were found to occur from the failure carefully to select the melons for size and quality, from packing them loosely and unattractively in crates, and from the use of containers of haphazard sizes and shapes. On the other hand, it was found that producers of cantaloupes who took extreme care in handling, grading, and packing had practically no losses and found a ready sale for their product. Studies in the marketing of berries, peaches, and other perishable products have emphasized further the general need for standardization and the desirable results that flow from its adoption to even a limited extent.

The Office, in studying the standardization problems involved in the marketing of these perishable products, also has gathered information in regard to the ways in which the problems are being met in various localities. A bulletin has been issued on this phase of marketing cantaloupes, and bulletins on grading, packing, and shipping other fruits and vegetables will follow. The Office also is compiling a digest of State laws on standardization and on weights and measures used in marketing.

In bringing about a general adoption of standardized supplies and methods in marketing, cooperative associations of growers, it is believed, may be relied on as important factors. Such organizations can extend uniform practices over important producing areas. On a larger scale, standardization may be effected through national organizations. In 1912, Congress established a standard barrel for shipping apples in interstate commerce, and a law enacted at the last session of Congress prescribes standard baskets of the Climax type for the interstate shipment of grapes, peaches, and other fruits.

Transportation of Perishables.

Assuming that the producer of perishable fruits or vegetables has solved the dominant problem of all in marketing, and one which must be treated separately—the finding of a market—he will need, after the preparation of his products, to take up the problems relating to transportation. Here he will meet again the limitations of small-scale operations, for he will find the securing of the necessary rolling stock, refrigerator cars, speedy shipment, and advantageous rates to be, in general, the more difficult in proportion as his shipments are less than car lots. The latter are the usual freight units, and to obtain facilities for smaller shipments is, in most cases, difficult and always relatively expensive. As a matter of fact, when the distance involved is more than 500 or 600 miles, the physical limitations surrounding the transportation of less than carload shipments of any kind make it quite out of the question to transport any highly perishable commodity in less than carload lots. While some producers have made a success up to such distances of individual, parcel-post, express, and freight shipments, for the most part the conditions to be met in marketing perishables with other than relatively short hauls have compelled growers either to sell to local buyers who assemble large quantities or to join cooperative associations of producers who assemble and ship on their own account.

The character of the physical equipment of the railroads and their services largely affects the success of the truck and fruit growers far from market. Shipments of perishables usually are made merely under ventilation in cool weather, but in warm weather refrigerator cars, carefully iced, must be employed. The age, type, and condition of these cars greatly affect their efficiency. Even the best of them must be packed in a certain manner and not above a certain height to insure the preservation of their perishable contents. Failure to refill ice bunkers at proper intervals, delays, or rough switching may cause losses in transit, even to well-packed perishables. The shipper himself may contribute to losses in transit by ordering too frequent changes of destination or diversions while the car is on its way, thus causing delays in reaching the ultimate market.

The Office of Markets and Rural Organization is investigating all phases of these transportation problems in marketing and finds that the producer may take several steps toward their solution. He may grow and even develop varieties of fruits or vegetables which will remain in good condition for long periods, and so will stand better than the usual varieties the delays and rough handlings to which shipments may be subjected before reaching the consumer. The producer also may pick, grade, and pack his products with especial care, making them in this way more resistant to adverse conditions.

Studies also are being made of terminal and transfer facilities of railroads as they affect economy of time, labor, and cost in the movement of perishables. In general, the Office is seeking to familiarize shippers with the problems of transportation companies and is seeking to inform the companies in regard to the problems of shippers to the end that both may cooperate for efficiency.

Supply of and Demand for Perishables.

The losses of perishable fruits and vegetables are not due solely to the mechanical operations of marketing—handling at producing points, on cars, and at the market. The intangible machinery of supply and demand causes the heaviest losses, bringing about violent price fluctuations and producing gluts during which carload after carload of products, held until spoiled, must be thrown away at a dead loss.

The term "glut" may be defined as any supply of a perishable commodity on a market more than sufficient to meet the demand at a price which will pay the bare cost of production and marketing. With high-priced winter-grown vegetables, a glut may occur when a relatively small supply is in the market. The more usual glut, however, is that which physically swamps the market at the height of the producing season. Such gluts as the latter may be of either of two types, caused in the one case by overproduction, and in the other by under distribution. In the former case, tremendous crops actually create a supply that the demand of all existing markets in reach can not absorb; in the latter, an excessive supply is dumped in a single market or group of markets, while other market points to which the produce might have been sent are insufficiently provided.

Whether anything can be done to better glutted market conditions and minimize the losses to producers and dealers will depend on the type of glut existing. Some phases of the problems go back to production and preparation for shipment. One fact which the investigations of the Office of Markets and Rural Organization have emphasized is that even during severe general gluts of a commodity, strictly first-class lots often may be sold profitably. Indications that such gluts are impending, therefore, should be a signal for the producer to grade more strictly than ever.

The gluts due to faulty distribution may be prevented when it is possible for shippers to keep accurately informed as to supplies at various market points. Even when such gluts have occurred, it may be possible to better conditions by finding near-by points which may absorb some of the surplus and by sending as many cars as possible of the oversupplied product to such localities.

By surveys in producing areas and market centers, the Office of Markets and Rural Organization has gathered as many data as possible in regard to supply and demand for perishables and, by making the results of its investigations public, hopes better to correlate the two primary forces in marketing. The normal consuming power of numerous markets for certain products has been ascertained and the data have been furnished to shippers with excellent results. This work will be extended. At the same time observations have been made of the market surplus of produce in certain shipping areas. The most direct work of the Office toward the solution of problems relating to supply and demand of perishables, however, has been through its market news service, which already has been discussed.

The United States Government will spend $36,129,000 this year for the development of agriculture and rural life.

POTATO IMPORTATIONS.

Department Prescribes Regulations to Prevent Introduction of Diseases and Insect Pests.

Those who contemplate importing potatoes from foreign countries into the United States are notified by the department that they should give consideration to the regulations regarding entry of potatoes to prevent the introduction and establishment of injurious potato diseases and insect pests. The following outline of the conditions under which potatoes may be imported is issued by the Federal Horticultural Board:

The importation of potatoes from Great Britain, including England, Scotland, Ireland, and Wales; Germany; Austria-Hungary; Newfoundland; and the islands of St. Pierre and Miquelon is prohibited by quarantine on account of the presence in those countries and islands of a serious plant disease known as potato wart or black scab.

The following countries, in which this disease is not known to occur and which have complied with the regulations of the United States requiring examination and certification prior to shipment, have the privilege of exporting potatoes to this country, namely, Denmark, Belgium, Holland, Bermuda, Cuba, and the Dominion of Canada.

Provision also is made in the regulations that in the case of foreign countries contiguous to the United States the examination and certification prior to shipment of potatoes offered for export will be waived when such countries agree to offer for export to the United States only potatoes free from injurious potato diseases and insect pests. The Dominion of Canada has taken advantage of this provision.

Importers Must Secure Permit.

Potatoes can be imported only under permit issued by the Federal Horticultural Board, United States Department of Agriculture, Washington, D. C. Permits are issued to the importers in the United States, and not to the foreign shippers. It is the duty of the permittee to notify the foreign shipper of the number of the permit. In requesting a permit the applicant is required to give the quantity of the potatoes which it is desired to import, the probable date of shipment, the name and address of the exporter, the country and locality where grown, the port of departure, and the port of entry (where the potatoes are cleared from customs and the duty paid). A separate permit is required for each foreign shipper. All permits expire on the 30th day of June next after they become valid.

No shipment of potatoes will be permitted entry until it has been examined by an inspector of the department and found or believed to be free from the potato wart and other injurious potato diseases and insect pests. While a negligible percentage of tubers infected with such common diseases as scab, black leg, fusarium wilt, and dry rot will not operate against the entry of shipments of potatoes, the presence of a considerable number of diseased tubers will cause a shipment to be refused entry; hence, all potatoes affected by any of these diseases should be eliminated and only clean and disease-free potatoes shipped. The expense connected with the inspection of potatoes, which is borne by the department, is considerable, and makes it necessary to limit the ports of entry. At the present time permits are issued only for the following ports: Seattle, Wash.; Portland, Oreg.; San Francisco, Cal.; Minneapolis, Minn.; Detroit and Port Huron, Mich.; Philadelphia, Pa.; New York, N. Y.; and Boston, Mass. For the present, therefore, all potatoes entering the United States from Canada must be forwarded in bond to one of the ports named for inspection. It may be found possible later to designate additional ports of entry.

Copies of the Regulations Governing the Importation of Potatoes into the United States and any information relating thereto may be obtained from the Federal Horticultural Board, United States Department of Agriculture, Washington, D. C.

COOLING MILK IMPORTANT.

Dairy Farmer Should Store an Abundant Supply of Ice.

Dairy farmers in localities where natural ice is available should make preparations this fall to store an abundant supply of ice for use next summer. The ice pond should be cleaned out and the ice house put in repair before storing commences.

To get milk in good condition to market, the dairy experts of the department estimate that the farmer should store one-half ton of ice per cow if cream is to be produced and 2 tons per cow if whole milk is to be shipped. This quantity, if properly stored, should provide the ice necessary for dairy and household use for a year, making due allowance for melting. Farmers' Bulletin 623, Ice Houses and the Use of Ice on the Dairy Farm, contains valuable and timely information on this subject.

Only through the use of ice can dairymen hope in warm weather to get their milk to market with a satisfactorily low bacterial count. Cooling with spring or well water is better than no cooling, but such water is not cold enough to chill the milk to the point where bacteria cease to multiply rapidly. These bacteria, which gain access to the milk during its production and handling multiply suprisingly as long as the milk is warm. This causes the milk to sour or to take on undesirable flavors and some of them may spread disease. Icing milk on the farm, therefore, is highly important even in moderately cool weather. Inasmuch as much market milk is many hours old before it is consumed, it also is important to keep it as cool as possible throughout its journey from the farm to the distributing point, and the distributor must see that it is kept chilled until it is delivered to the housewife.

Methods of Chilling Milk.

Never put ice directly into milk. The ice may contaminate the milk and add water as it melts.

It is not economical to place warm milk directly in a tank of ice water. The milk should first be cooled over a cooler through which passes cold running water from the well or spring. After some of the heat is removed the milk cans should be placed in a tank containing ice and water, which should come well up to the neck of the cans. Frequent stirring of the milk with a clean stirrer hastens the cooling process.

Many tanks waste ice because they are too large for the number of cans chilled. A small tank for cooling one can at a time may be made from a barrel sawed to the proper height.

Insulating jackets should be placed around the cans of chilled milk whenever milk is to undergo a long haul to the station or be a long time in transit. These jackets will help materially in keeping it cold until it reaches its destination.

BRIEF ITEMS.

Prairie dogs can be destroyed by poison at a cost varying, according to prevailing conditions, from 5 to 8 cents an acre.

Under the Federal-aid road act, within the next five years $160,000,000 will be spent by Federal and State Governments in improving rural roads.

Eight million six hundred and eighty thousand dollars of Federal and State Smith-Lever funds will be spent each year after 1922 on the direct education of farmers.

Every spring the lights of the lighthouses along the coast lure to destruction myriads of birds en route from their winter homes in the South to their summer nesting places in the North.

Sixty-seven State agricultural colleges and experiment stations are devoted to the development of agriculture. Their endowment, plant, and equipment amount to $160,000,000. They have an income of more than $35,000,000, with 5,500 teachers and a resident student body of over 75,000.

SHORT-TIME LOANS.

Importance of Method and Character of Farming as Factors Influencing Interest Charges.

Bankers are more and more requiring of farmers who wish short-time loans statements as to their business similar to those that are required of merchants and manufacturers. In certain cases bankers supply farmers with specially prepared blanks or rate sheets which the farmer is required to fill out before his application for a loan is considered. In discussing this practice, the writer of Department Bulletin No. 409, Factors Affecting Interest Rates and Other Charges on Short-Time Farm Loans, says, in part:

"One important purpose of the rate sheet is to show how far the farmer devotes his energies to raising a single crop, or how far he diversifies his farming and gives attention to the raising of foodstuffs for his family and feed for his animals. If, for example, farmer A has a garden and raises enough vegetables and fruit to supply the family needs, if he keeps enough poultry, pigs, and other live stock to meet the requirements of his household for eggs, meat, milk, and butter, if he provides enough pasture, hay, and fodder to feed his live stock, he has this advantage, that when the cash crop, whether cotton or grain, is ready for sale in the fall it is not tied up with a lien to meet a season's advance for food or feed. He is in a position, therefore, to sell his cash crop whenever the marketing conditions are favorable. The relatively favorable position of such a farmer assists him in commanding the confidence of lenders.

"On the other hand, consider farmer B, who comes to the local merchant and makes credit purchases of bacon, corn meal, and canned goods for table use, and who goes back to his farm with a bale of hay or a sack of feed in his wagon box. In his cotton field there are patches where the yield is poor because of low soil fertility and indifferent methods of cultivation. The only enterprise on the farm is cotton growing, and this crop is mortgaged in advance to supply the food and feed purchased in town and consumed on the farm. Farmer B has little if any credit at the bank. He gets a limited store credit on an advancing basis from a local merchant. His is the most expensive kind of credit, and probably he is the farmer who is the least able to pay for it.

Responsibility for the One-crop System.

"In some regions the banker even more than the farmer is responsible for the continuance of a one-crop system of farming. This is especially true where bankers refuse to extend redit to farmers except on the basis of a single crop, such as cotton in the South or a cereal crop in the North. Such a mistaken policy can be corrected only to the extent that the banker realizes the evil effects of one-crop farming and undertakes to cooperate actively with the farmer in the extension of credit on a proper basis.

"It is scarcely possible to lay too much emphasis upon the practical importance of the method and character of farming as factors affecting interest rates on farm loans. Every agricultural region has its own peculiar problems of adapting farming methods and practices to local conditions. There are progressive bankers in various parts of the country who realize the importance of cooperating with the farmers in promoting the kind of farming that will be permanently beneficial to the community. This suggests a common interest between bankers and farmers which should be made the basis for further cooperative effort.

Attitude of the Loan Agency Toward the Farm-loan Business.

"In many regions the banks are not accustomed to dealing with farmers to any extent, especially with tenants and croppers, and the latter, therefore, must obtain their loans from other sources. This is especially true in the cotton States, where the system of advances from merchants to farmers still prevails. A few banks are breaking away from this traditional attitude, however. In one community of South Carolina the banks are actively soliciting business with croppers and renters as well as with farm owners. One of these banks began this policy 15 years ago on the assumption that many small accounts of this character properly scattered would be safer for the bank than a few large accounts. The experience of these banks has led them to become more active than ever in the extension of their farm-loan business, while the farmers of their vicinity generally are obtaining loans on better terms than those living under similar agricultural conditions elsewhere.

"It is realized that the farmers in some sections of the country are accustomed to carrying check accounts with banks and are as familiar with the requirements of banking relations as other business men. There are other regions, however, where many farmers have not had such experience in commercial matters and where the bankers could be of practical assistance in making the farmers better acquainted with banking methods. The banker should remember that the farmer is not subject to the periodic visits of an examiner, requiring that certain matters receive attention promptly within definite time limits. This is one reason why farmers do not always realize the importance of meeting their obligations on specified dates. One plan that has proved helpful in this connection is to have the banker give the farmer the benefit of ample written notice with reference to the maturity of interest or other payments.

"Existing banking methods and practices as related to farm loans are often criticized by reason of the unwillingness or inability of certain bankers to carry over farm loans until the farmer is prepared to meet his obligations. Complaint is often heard of cases where a banker, with a little extra effort, could make arrangements to carry over the loan of some farmer patron, but where in fact an apparent indifference to the welfare of the farmer is shown. It is interesting to learn, however, that many bankers manifest exactly the opposite attitude, and use every resource at their command, including such assistance as they can obtain at larger financial centers, in order to carry over their farmer patrons until such time as payment on loans can be made conveniently.

"Where banks are active in developing farm-loan business they realize the importance of understanding the requirements of safe and progressive agriculture and also the importance of educational work among farmers in the interest of improved agriculture. Such knowledge gives the banker a better understanding of the merits of farm loans and at the same time tends to raise the standard of farm-loan paper. These considerations not only make possible a safer and larger loan business for the banker but also lead to a decrease in the interest rates paid by the farmer."

EGGPLANT BEETLE.

Experiments of Specialists Show That Pest Can Be Controlled by Poison Sprays.

The nature and habits of the eggplant tortoise beetle, a newly studied insect which attacks eggplant and related species of plants throughout the South, and methods for the control of the pest, are described by Thomas H. Jones in a professional paper of the department, Bulletin 422, recently issued. Although the beetle is not an important enemy, it is, at times at least, destructive enough to warrant the use of insecticides for its control.

The adult or beetle is small and dull green or greenish yellow in color. In its development it passes through five larval and one pupal stage. Both the beetles and their larvæ attack leaves, eating small, somewhat circular, holes. In addition to eggplant, the insect attacks potato and various wild Solanums. At Baton Rouge, La., where studies of the insect were made, several generations, perhaps as many as five, may be produced in a single season.

Experiments of the department's specialist who made studies of the beetle demonstrate that it may be controlled by an arsenical sprayed or dusted on the plants, such as arsenate of lead or arsenite of zinc.

"WHITE ANTS."

Preventive and Combative Measures for Guarding Against Damage by Destructive Insects.

Methods of combating termites, or "white ants," and guarding against their destructive activities in woodwork, books, stored papers, and other material, trees, nursery stock, and garden and field crops are explained in Farmers' Bulletin 759, recently issued by the department.

The insects, which are not ants and only superficially resemble them, primarily attack woodwork and cause greatest damage by weakening or destroying portions of buildings and other wooden structures in contact with the ground. On recently cleared land or any other soil containing decaying wood, however, they may prove destructive to growing plants. The insects also eat into numerous articles stored on damp, wooden shelves or under conditions otherwise attractive to them. Articles attacked in this way include books, documents, objects made of pasteboard or wood pulp, cloth, clothing, leather products, and food substances.

Termites may cause damage about the home for long periods without the knowledge of the owner. They live in colonies in dead stumps or in other decaying wood and enter the woodwork of buildings under ground where timber is in contact with the soil or through cracks in concrete. They often destroy large portions of the interior of pillars and other wooden members without giving any indication of their presence.

When termites are found to be present it is usually through noticing the annual emergence of the flying members of the colony at swarming time in the spring. The place of emergence should be noted, as this indicates the approximate location of the infested timbers. The presence of small branching tubes of earth on stone or metal, serving as passageways to wood, may be another indication that termites are at work in a building.

Either preventive or combative measures may be taken against the inroads of termites. In all new building operations, care should be taken that no untreated timber is in contact with the ground or is set in wet concrete. The latter condition is not a protection, since the concrete often cracks and the insects may gain entrance through the crevices. If wood must be placed in contact with the earth, only timber treated with some such substance as coal-tar creosote should be used. Cellar floors of concrete should join the walls in a curve to guard against cracks. If buildings are constructed without cellars the wooden flooring should be raised well above the ground.

If termites are discovered in woodwork it will be necessary usually to remove the damaged timbers and replace them by stone or brick work or treated wood. The ground at the approximate entrance passage of the insects and any earth tubes discovered should be drenched with kerosene oil. Infested timbers also may be drenched with the oil.

Books, documents, and other stored material can be insured against attack by the termites by keeping them away from warm, moist locations while in wooden containers. The insects may be driven from such material by spreading it in the sun. If all connection between the storage place and damp earth is cut the insects will not return.

Termites are especially likely to attack the wood of greenhouses, where warmth and moisture are the rule. Steps similar to those described for other buildings should be adopted to rid infested greenhouses of the insects. Supports for flower benches may be sawed off near the ground and made to rest on bricks or stone. If the termites are in the soil they may be killed in many instances by applications of carbon bisulphid. Plants may be sprayed effectively with a 5 per cent solution of kerosene emulsion. In order to prevent attacks by termites on living trees the tree surgery method of treating scars and dead limbs and spots is recommended.

Nursery stock may be attacked by termites if planted on recently cleared land. Such locations, therefore, should be avoided. Care should be taken not to permit the roots of the young trees to dry out before planting, as such weakened stock is liable to attack. Damage to field crops by termites may be prevented by late fall plowing and crop rotation.

FALL WORK IN ROSE GARDENS.

Diseases Controlled by Spraying and Pruning Dormant Bushes.

Rose gardeners should take advantage of the fall season, say specialists of the department, to make their plants as free as possible from disease by methods that can not well be followed during the growing season. It is true, in general, that whatever the disease, the affected portions of the plants should be cut out in the fall and the shortened bushes sprayed. It is assumed, however, that spraying will not have been delayed until fall, but will have been carried on as a control measure at frequent intervals since spring. The diseased wood removed in the fall, together with the old leaves and débris under bushes, should be burned. In case of attacks by rusts, canker, and leaf spots the diseased wood or leaves should be removed and burned even during the growing season.

For powdery mildew, the control sprayings for the summer spores should be with lime-sulphur or potassium sulphid. After cutting back in the fall, the plants should be sprayed with lime-sulphur or strong Bordeaux mixture. The control spraying for rusts should be ammoniacal copper carbonate. The fall spraying should be with a strong Bordeaux mixture. For leaf spot, leaf blight, and anthracnose the control sprays may be either Bordeaux mixture or ammoniacal copper carbonate, and the fall spraying should be with the former.

Leaf Blotch.

Leaf blotch, also known as black spot, is a common and very injurious disease. The first symptoms are the appearance of irregularly shaped blackish spots on the upper surface of nearly full-grown leaves. In this stage the trouble may be controlled by several sprayings with ammoniacal copper carbonate or Bordeaux mixture, but if these precautions are not taken another stage of the fungus develops in the same spots. The fungus in this later stage lives over the winter on fallen leaves and sets up a new infection in the spring which can only be prevented by raking up and burning the fallen leaves and spraying the dormant bushes with strong Bordeaux mixture.

Another disease to which roses are subject is canker, which starts with the appearance of small reddish patches on the green parts, generally of 1-year-old growth. Such infected areas may increase until the entire stem is surrounded and may extend for several inches along the branch. The only advice to be given is to cut away rigorously all diseased branches, and it may be necessary to cut back entire bushes if badly infected. Cover the exposed surfaces made by this cutting with paint or tar. This diseased material must be burned and the dormant bushes sprayed with strong Bordeaux mixture in both the autumn and early spring.

Figures show that school attendance increases importantly wherever country roads are improved.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

CONTAGIOUS ABORTION.

Government Inaugurates Campaign to Lessen Losses Caused by This Serious Disease of Cattle.

The Bureau of Animal Industry of the department inaugurated its campaign to lessen contagious abortion in beef and dairy cattle with a special exhibit at the National Dairy Show which opened in Springfield, Mass., on October 12.

This animal disease, which it is estimated is costing cattle owners $20,000,000 a year in dead calves and lowered milk production, the Government veterinarians say is second in importance only to tuberculosis in cattle, and rapidly is coming to the front as the most costly and serious disease which the dairy industry in the United States has to combat. Reports from many sections indicate that the disease is spreading rapidly to all parts of the country. Congress at its last session recognized the seriousness of the disease by appropriating $50,000 to be used by the department in studying the scourge and developing methods for its control.

Abortion in cattle, which prevents the bearing of live calves and frequently causes cows to become sterile and remain dry, is caused by the *Bacillus abortus*. This bacillus is carried from animal to animal and from herd to herd by infected bulls and cows and may be spread in herds by infected feed and water or the discharges of aborting animals. The disease is controllable by isolation and antiseptic treatment of infected animals and by disinfection and sanitation of barns and cattle lots. The department veterinarians, however, place the greatest emphasis on preventive measures. Proper disinfection of bulls and cows will prevent its spread, and persistent antiseptic treatment of aborting cows will overcome sterility and enable the cows to produce healthy calves. The Government specialists, however, know of no internal drugs that will effect quick and positive cures, and state that serum treatment as yet is in an experimental stage. The exhibit at Springfield, therefore, is devoted entirely to illustrating the simple and inexpensive preventive and control measures which the Government pathologists have found effective.

The department's booth contains a number of charts and photographs dealing with the disease and warning cattle owners of its danger, and in addition contains a complete exhibit of the inexpensive disinfectants and simple apparatus needed by the farmer to protect his herd or to combat the disease if it has gained a foothold. The exhibit is in charge of Government pathologists who explain to cattle owners how to apply these methods.

The department also has in preparation a Farmers' Bulletin and circulars conveying exact information designed to encourage dairymen and cattle raisers to apply these remedies and join with the Department of Agriculture and their State colleges and experiment stations in a campaign for the control and eradication of this threatening infection.

KINKS FROM COUNTY AGENTS.

Extension Workers Try Out Methods to Aid Their Communities.

Here are a few kinks tried out and found successful by county agents in the North and West.

Certain farmers of Clay County, Minn., found that potato standardization work pays. These farmers planted seed in plats of from 1 to 5 acres. They used only seed true to type, of good quality, free from disease, and carefully treated the seed before planting. The plants were inspected carefully twice and all diseased hills removed. Two of these farmers sold all of their plat potatoes for $1.06 per bushel when the price for the ordinary run of potatoes was 45 cents. Fifteen dollars extra spent for seed for 10 acres returned a profit of $75 on another farm.

Oneida County, Wis., is growing potato seed in more than carload lots. Twenty-five cars were contracted for at 70 cents per bushel and an option taken on 15 cars more at the same price. This same seed was sold to local buyers previously for from 30 to 40 cents per bushel.

Coulee crickets threatened to become very destructive in Fremont County, Idaho. After consultation with entomologists, the following poison bait was used: Bran, 15 pounds; white arsenic, 1 pound; sugar factory molasses, 1 gallon. Fifteen to 67 dead crickets to the square foot were found, which, it is estimated, represented not less than 95 per cent of them. Out of an appropriation of $200 made by the county commissioners to the farm bureau for this work the county agent returned $120. A few years ago the county spent $4,000 in ineffective methods of control.

Grundy County, Ill., has tested the effect fo rolling on the germination of oats, both drilled and broadcasted. If the germination on the rolled part of the broadcasted field in the demonstration is counted as 100, the average germination of the unrolled strips was only 67.3 per cent. In the drilled fields the unrolled check strips showed a germination of only 72.5 per cent to that on the rolled part.

Farm women in Ashland County, Wis., who were induced last winter to hatch early chickens for the broiler market found a sale at 50 cents each for all their chickens weighing 1½ to 2 pounds live weight.

The agent in Houghton County, Mich., reports a way of providing outtake flues for barn ventilation: "The flues are built like silos, out of matched strips of inch lumber, and the hoops are made from old buggy tires or similar bands of light iron with a tightening bolt at the ends. The flues extend above the highest part of the roof."

The provision of a limestone plant in Albany County, N. Y., will save to the farmers in one year $11,250 on 5,000 tons of lime. They will get their lime at $1.60 per ton in bulk, a reduction of $1.25 per ton for time at their railroad station, and they will save also a haul of 6 miles, equal to another $1 of time.

Farm bureau associations in La Plata and Montezuma Counties, Colo., have saved $300 by purchasing binding twine in 10,000-pound lots. They are now considering buying grain sacks in large quantities.

GRAIN TRADE TO BE HEARD.

Department Will Hold Hearings Before Adopting Grain Standards Regulations.

Before the adoption by the department of the regulations to enforce the United States grain-standards act, a tentative draft of the regulations will be published and distributed and a public hearing or hearings will be held at which all interested persons may present their views. The tentative draft is now being prepared by a committee of the department following meetings with seven representatives of the various branches of the grain industry who were invited by the Secretary of Agriculture to participate in the preliminary discussions in regard to the regulations.

The department was represented at the meetings by a committee consisting of Charles J. Brand, Chief of the Office of Markets and Rural Organization, and Dr. William A. Taylor, Chief of the Bureau of Plant Industry, assisted by grain experts from the Office of Markets and the Bureau of Plant Industry. The representatives of the grain trade were: Fred J. Lingham, of Lockport, N. Y., chairman of the special committee on Federal grades of the Millers' National Federation; E. C. Eikenberry, of Camden, Ohio, president of the Grain Dealers' National Association, and also an active country shipper of grain; Eugene Funk, of Bloomington, Ill., president of the National Corn Association; and an active grain producer; John C. F. Merrill, secretary of the Chicago Board of Trade; John W. Shorthill, of York, Nebr., secretary of the National Council of Farmers' Cooperative Elevator Associations; Horace E. Emerson, of St. Paul, Minn., chief grain inspector of the State of Minnesota; and Ferdinand E. Meyer, vice president of the Chamber of Commerce, Baltimore, Md., and an active exporter of grain.

HOG CHOLERA PREVENTION

Farmers themselves can do much toward preventing the spread of hog cholera and placing swine raising and feeding on a safe and more profitable basis

To Keep Hog Cholera From Reaching Your Herd

Locate your hog lots and pastures away from streams and public highways, and do not allow your hogs to run on free range or highways nor to have access to canals or irrigation ditches.

Do not visit your neighbor's farm nor allow him to visit you if he has hog cholera on his premises.

Do not drive into hog lots after driving on public highways.

Do not use hog lots for yarding wagons and farm implements.

Do not place newly purchased stock, stock procured or borrowed for breeding purposes, or stock exhibited at county fairs immediately with your herd. Keep such stock quarantined in separate pens for at least two weeks, and use care in feeding and attending stock to prevent carrying infection from these to other pens.

Burn to ashes or cover with quicklime and bury under 4 feet of earth all dead animals and the viscera removed from animals at butchering time, because they attract buzzards, dogs, etc., which are liable to carry hog-cholera infection.

If hog cholera appears in the neighborhood confine your dog and encourage your neighbor to do the same.

Mange, lice, and worms lower the vitality of hogs, rendering them more susceptible to disease.

If Hog Cholera Appears in Your Herd

have all hogs treated immediately with antihog-cholera serum, after which they should be kept on a light diet, with pure drinking water, and confined to limited quarters that should be cleaned and sprayed 3 times a week with "1 part of compound cresol solution to 30 parts of water," until the disease has abated in the herd.

To obtain the best results the serum must be administered as soon as the disease is detected in the herd. Be sure that the temperature of all hogs is taken. A temperature above 104° F. in ordinary weather and when the animal is not excited indicates infection, and such hogs require an increased dose of serum.

To Rid Premises of Infection

Remove all manure and mix it thoroughly with quicklime.

Burn all litter, rubbish, and old hog troughs.

After the premises are thoroughly cleaned, spray walls, floors, and other surfaces, including remaining hog troughs, etc., with a disinfectant (1 part compound cresol solution to 30 parts water). Where hog houses are small, turn them over, exposing interior to sunlight. Clean premises, properly exposed to sunlight, will not retain infection any great length of time.

Wallow holes and cesspools should be filled in, drained, or fenced off.

All runs underneath buildings should be cleaned and disinfected and then boarded up to keep hogs out.

Destroy hogs that do not fully recover, as they may be carriers of cholera infection.

For further information regarding hog cholera write to

THE BUREAU OF ANIMAL INDUSTRY
U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., OCTOBER 25, 1916. No. 12

RAISING ROAD FUNDS.

Important Savings Effected by Issuing Highway Bonds on Deferred Serial Retirement Plan.

People of a county intending to raise funds for highway improvement would do well to consider the advantages to them of the deferred serial plan over the ordinary sinking-fund plan of retiring long-term bonds. Under the serial plan, a certain amount of bonds is retired each year and the bonds so retired cease to be an interest charge on the community. Under the sinking-fund plan none of the bonds is retirable until the end of a definite period, and the entire sum raised bears interest for the entire life of the bond. The county, therefore, pays interest on the money so borrowed and in addition sets aside each year as a sinking fund an amount sufficient to retire all the bonds when they become due. The sinking fund is deposited with banks and earns some interest. This interest ordinarily is only 3 per cent, whereas the county has to pay 5 or 6 per cent to its bondholders. The serial plan is a much cheaper method of raising money for road improvement, even when the sinking fund earns interest as high as 4 per cent, and in the opinion of the road specialists of the department should be utilized whenever it is possible to market serial bonds.

In a study of the road bond issues of several counties, J. E. Pennybacker and M. O. Eldridge, of the Division of Road Economics, Office of Public Roads and Rural Engineering, found that the serial plan, if it had been adopted by several counties, would have saved the taxpayers in one county $154,269, in another county $80,702, and in a third county $65,367 over the other plan with a sinking fund bearing interest at 3 per cent. With a sinking fund earning 4 per cent, the savings would have run as high as $72,288 in one of these counties. These conclusions appear in the recently published Department Bulletin 393, Economic Surveys of County Highway Improvement.

The following concrete examples are taken from this bulletin:

"In Dallas County, Ala., the bonds amounted to $350,000, payable in 30 years at 5 per cent. Assuming the sinking fund to bear 3 per cent interest, as set forth in the chapter on Dallas County, the total financial burden to the county for interest and the liquidation of the bonds during the 30-year period will be $745,702.80. An equal amount of bonds at the same rate of interest, if issued under the deferred serial bond method, with the first bonds payable 6 years from the date of issuance and an equal amount payable each year thereafter for 24 years, would cost the county at the end of the 30 years $665,000, or a difference, as compared with the sinking-fund method, of $80,702. If 4 per cent could be realized on the sinking fund instead of 3 per cent, the saving for the deferred serial plan over the sinking-fund plan would still be $47,216.

"Lauderdale County, Miss., which issued $500,000 of 5 and 5½ per cent bonds, adopted the deferred serial-bond method, with the first payment coming 11 years from the date of issue and the last payment 25 years. If the county had issued the bonds on the 5–25-year basis the cost would have been $906,875, as compared with the cost on the basis adopted of $972,232, or a difference of $65,367."

Even in the case of a small issue the advantage of the serial plan is illustrated in Dinwiddie County, Va. This county issued $105,000 of 5 and 6 per cent bonds, payable in 30 years, but the bonds are callable after 20 years. Assuming that they will be retired at the end of 25 years on the sinking-fund plan, with interest on sinking fund at 4 per cent, the total cost would be $218,031, whereas if they had adopted the 6–25-year serial method the cost would be $201,100, or a difference of $16,931.

The chimney swift furnishes one of the unsolved problems of bird life. The flocks drift slowly south until on the northern coast of the Gulf of Mexico they become an innumerable host. Then they disappear and for five months their hiding place is a mystery.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

MARKETING BY MAIL.

Problems Involved in Transportation of Farm Products by Parcel Post—Direct Dealing.

Although the marketing of farm produce by parcel post is relatively new in the United States, it is, in fact, only a special case of direct dealing between producer and consumer, which was the very earliest type of marketing. Only the transportation medium is new in parcel-post trading. This itself is to a certain extent paralleled by express, which has been available and has been utilized by some farmers for many years. Even with the older forms of direct dealing, in which sales are made from house to house or through farmers' markets, parcel-post marketing has points in common in that the actual producer of the goods is known to the consumer of them, and the satisfaction or dissatisfaction of the latter has a direct and potent effect on the success of the former's business.

In spite of these general similarities, however, many new problems in the marketing of farm produce were created when the mail system was made available for transportation of relatively bulky commodities, all post offices and rural routes thereby being made shipping agencies. This was in striking contrast to the facilities furnished by older transportation systems, which the farmer could use only by making a trip to a railroad or express office. Many of the new problems have been attacked by the Office of Markets and Rural Organization of the department, which has made in its work hundreds of experimental shipments of various commodities over varying distances under different seasonal and other conditions and has studied methods of grading and packing and of transacting business. Much practical information has been gathered in this way and has been made available both to the producer and to the consumer.

Scope of Parcel-Post Marketing.

By all persons familiar with the general marketing system in this country it was recognized from the first that whatever place of usefulness the parcel post might find among marketing agencies it would never wholly or even in very large part supersede the usual methods employed in the movement of marketable farm produce. One of the

strongest reasons for this recognition was the vast bulk of such produce which how is poured by trainloads and shiploads into the great consuming and distributing centers. Other strong reasons were seen to be rooted in practical psychology. The growth in cities of the custom of ordering food materials by telephone a short while before they are needed and the decrease, even where this method is not followed, of the custom of going in person to a central market place indicate that the average urban housewife prefers not to plan far ahead or to put herself to extra trouble in the hope of securing superior goods or price concessions.

It was realized that many farmers, for their part, either could not find the time or would not care to go to the trouble of giving goods to be sent by parcel post the careful preparation required for success under that method of marketing. It was realized, also, that since in a large proportion of the transactions the producer and consumer would not know each other, and since the former must, in most cases, look to future payment and the latter be given no opportunity to select personally the products he was to receive, there would be at first a natural distrust of such a method of marketing and a tendency to continue the use of the established known methods.

It was recognized, on the other hand, that there was a large and important field for the parcel post in marketing and that for the sake of efficiency the scope of this field should be more or less definitely ascertained. From the experiments and studies of the Office of Markets and Rural Organization it has been found that a few considerations, in most cases, determine the applicability of the parcel post to the marketing of farm produce. The chief of these considerations are the nature of the product, which will determine its perishability and the possibility of properly packing it; and the weight and value of the product and the distance it is to be shipped, which will determine whether the parcel post may be used most economically. In general, it was found that the more valuable a product is for a given weight, the greater is the likelihood that the parcel post may be employed profitably in marketing it. This often means that partial or complete preparation will produce an article that may be marketed satisfactorily by mail. It may not be worth while, for example, under certain conditions to market apples or other relatively weighty or bulky fruits by parcel post, while jellies, jams, concentrated fruit juices, sirups, and other products made from the same fruit may be marketed satisfactorily to both parties by mail. In the same way it may not be profitable to ship milk through the mails, while good returns may be obtained from the parcel-post marketing of high quality cream and butter. As a matter of fact, the work of the Office of Markets and Rural Organization has shown that many of the less bulky articles produced on the farm can be shipped profitably by parcel post, at least within the second zone, or 150 mile radius, when they are properly packed, when train schedules are advantageous, and when the prices obtainable are not abnormally low. The office has demonstrated by experiments and has found from observation that the products that may be shipped satisfactorily in many parts of the country include eggs, butter, cheese, dressed fowls, sausage, fresh and cured meat, honey, maple sirup, fruits and berries, jams, jellies, and other fruit products and delicacies, and many vegetables, especially those in which freshness has an important bearing on flavor and edibility.

Problems in Parcel-Post Marketing.

One of the first and most important problems in parcel-post marketing, as in all other marketing, is the finding of a market; that is, a buyer. It is often difficult for the farmer who desires to market by parcel post and who would be well satisfied with the retail prices prevailing in a near-by city, to find actual customers there. It is equally difficult in many cases for the consumer who desires to obtain a supply of fresh country produce through the mails to get into touch with a farmer. So real are these difficulties that much of the parcel-post marketing at the present time, the Office of Markets and Rural Organization estimates, is carried on between relatives and friends. The office is now making a study of methods of establishing business contact, and will eventually issue a bulletin on this subject. The possible methods it has already suggested are by personal acquaintance, through acquaintance of a third person, by advertising in a paper or magazine, by a personal canvass, and through the cooperation of the post office in the town in which a market is sought.

After a customer has been secured, the problem of keeping him satisfied arises. Inferior or ungraded products can not be marketed successfully by parcel post. The farmer must keep in mind constantly that obtaining goods by parcel post is more troublesome to the consumer than buying them from a near-by store, and that the city housewife can be induced to take this additional trouble, if at all, only for the sake of getting better products at the same or a lower price than she pays for inferior goods, or for the sake of obtaining more cheaply goods of the quality she has been in the habit of buying. In either case, the goods sent by the farmer should be carefully graded. It may be taken as a general rule that it pays to market by parcel post only choice goods.

After the products have been graded, selected, or prepared in other ways, they must be packed attractively in containers chosen for lightness, economy, and strength. The Office of Markets and Rural Organization has made tests with various containers and has found a number of types on the market that serve the purpose satisfactorily.

The importance of proper containers is illustrated in the shipment of eggs. When the parcel-post service was inaugurated it was generally believed that eggs could not be shipped satisfactorily by mail. Some of the early experiences of shippers strengthened this belief. Because of the development of containers affording greater protection, however, the successful movement of eggs by mail became possible, and the amount of this product shipped by parcel post now probably exceeds that of any other one product so marketed.

Choice of Shipping Time.

Success in parcel-post marketing demands that the farmer continue to give thought to details after proper preparation of his goods for shipment. The mere placing of the packages in the mails at any time is not sufficient. Mail schedules should be carefully looked into and the commodities should be started on their journey, if possible, so that they will travel chiefly at night and reach their destination early the following day. In this way natural refrigeration can be utilized to advantage, since the nights are usually cooler than the days. It is especially important that such precautions be taken in the shipment of products like butter or lard, which may be liquefied by heat, and dressed fowls and other meats which may spoil if they become warm. When dressed, fowls should in every case be placed in the coolest available location and allowed to lose their animal heat before they are prepared for shipment.

In some parts of the country, and with certain products, it may be necessary to confine shipments of certain perishables to the cooler periods of the year. The growing use of refrigerators in post offices, however, is decreasing the necessity for the observance of such restrictions.

The use of the parcel post for marketing farm products, it has been disclosed by the studies of the Office of Markets and Rural Organization, has extended steadily among more and more persons and has been widened to include an increasing number of products. The fact that both consumers and producers have observed the success of the plan, as used by neighbors, has been an important factor in stimulating the use of the system. The development of efficient containers has had an important effect. The Office of Markets and Rural Organization has had the hearty cooperation of the Post Office Department, which has worked out methods of handling which have greatly increased the efficiency of the service. In more than 35 post offices special parcel-post campaigns have been carried on, lists of producers wishing to furnish supplies by mail have been published and distributed, and in many offices refrigerating facilities have been installed.

Fight Contagious Abortion in Cattle

ABORTION is insidious. It creeps in like a thief in the night, and it is not always an easy thing to trace. New animals, whether male or female, purchased from an affected herd, or a cow served by a neighbor's bull which has become affected, or contact with diseased animals in other ways, may be the means of introducing the disease. Take warning, therefore, and protect your herd from this destructive disease.

Is your herd already affected? If so, you have some work ahead of you. But don't quit on that account. Abortion has been and can be controlled by thorough and intelligent treatment. It is not a lazy man's job, but by careful attention to details of sanitation and hygiene and the control of breeding the disease can be overcome.

Don't waste your energies on unprofitable animals. Send the boarders to the butcher; then give your attention to the good cows. "An ounce of prevention is worth a pound of cure." Clean up the stable, put in windows and let the sunshine in, then give a liberal coating of whitewash, so that you can see if there is any dirt. Drain the barnyard and make everything clean and sanitary.

Clean and Disinfect Stable, etc.

Chemical disinfectants are used to good advantage in controlling disease and the following directions for their use are given:

1. Sweep ceilings, side walls, stall partitions, floors, and other surfaces until free from cobwebs and dust.

2. Remove all accumulations of filth by scraping, and if woodwork has become decayed, porous, or absorbent, it should be removed, burned, and replaced with new material.

3. If floor is of earth, remove 4 inches from the surface, and in places where it shows staining with urine a sufficient depth should be removed to expose fresh earth. All earth removed should be replaced with earth from an uncontaminated source, or a new floor of concrete may be laid, which is very durable and easily cleaned.

4. The entire interior of the stable, especially the feeding troughs and drains, as well as milking stools and all other implements, should be saturated with a disinfectant, as cresol compound (U. S. P.), or carbolic acid, 6 ounces to every gallon of water in each case. After this has dried, the stalls, walls, and ceilings may be covered with whitewash (lime wash), to each gallon of which should be added 4 ounces of chlorid of lime. The disinfectant, of course, should be rinsed thoroughly from drinking troughs before animals again drink from them.

5. All refuse and material from stable and barnyard should be removed to a place not accessible to cattle or hogs. The manure should be spread on fields and turned under. In addition, the yards should be disinfected by sprinkling liberally with a solution of copper sulphate, 5 ounces to a gallon of water.

The best method of applying the disinfectant and the lime wash is by means of a strong spray pump, such as is used by orchardists.

This method is efficient in disinfection against most of the contagious and infectious diseases of animals, and should be applied immediately following any outbreak, and, as a matter of precaution, it may be used once or twice yearly.

Treatment of Animals.

The following is an outline of a method of treating the animals in an infected herd:

DISINFECTING THE BULL.

To prevent the bull from carrying the infection from a diseased cow to a healthy one, first clip the tuft of long hair from the opening of the sheath, then disinfect the penis and sheath with a solution of one-half per cent of cresol compound, lysol, or 1 per cent carbolic acid, or 1 to 1,000 potassium permanganate in warm water. Two tablespoonfuls of fluid equal 1 ounce, therefore, this amount of antiseptic added to 6 pints of boiled water will make approximately a 1 per cent solution.

The only apparatus necessary is a soft rubber tube ⅝ inch in diameter and 5 feet long, with a large funnel attached to one end; or an ordinary fountain syringe and tube would serve the purpose. The tube should be inserted into the sheath and the foreskin held with the hand to prevent the immediate escape of the fluid. Elevate the funnel as high as

—on your farm —in your district

DO YOUR PART TO SAVE $20,000,000 LOSS IN DEAD CALVES AND STERILE COWS

Preventable
Controllable

ISOLATE AFFECTED ANIMALS
TREAT ABORTING COWS DISINFECT BULLS
CLEAN UP PREMISES

Good Business for Cattle Owners

CAMPAIGN AGAINST ABORTION ALREADY STARTED.

The Bureau of Animal Industry of the Department of Agriculture is at work in a determined effort to devise a method of treatment which will be effective in controlling this great scourge.

Are you doing *your* part?

YOU MUST HELP.

It is impossible to reach all infected herds, nor are there sufficient funds available to provide individual attention. But it is the aim to suggest methods for combating the disease, and ways to protect your herd and your district. But you yourself must put these measures into effect.

***Write to your State Experiment Station,* not only to ask for aid but to offer your assistance in a systematic campaign to control this disease.**

"IN UNION THERE IS STRENGTH."

If you do not belong to some dairymen's or cattlemen's association, then join one, and see that your association gives proper attention to this serious matter. It is only by united action that such a widespread disease can be suppressed. Abortion is fast becoming the *most destructive* of all animal diseases. It hits animal husbandry at its very source. If the offspring are killed, and the bovine species can not reproduce its kind, we get neither beef nor milk. The necessity is plain for vigorous action to prevent such a calamity.

possible and pour in the fluid until the preputial sac is filled. In addition to this, the hair of the belly and inner sides of the thighs should be sponged with an antiseptic of twice the strength of the irrigating solution. This disinfection should invariably precede and follow every service.

TREATMENT OF THE COW.

Isolate the aborting cow. The germs of the disease are contained in the discharge, and in the dead fetus and its membranes. Gather these up and bury or burn them and disinfect the stall thoroughly. *Don't neglect this cow.* By thorough treatment you can restore her to usefulness and prevent sterility.

More than half the cows abort but once, so don't sell your cow because she aborts.

The uterus should be irrigated daily with one of the antiseptics mentioned for the bull, using the same apparatus, and irrigation should be continued until discharge ceases. If large numbers of animals are to be treated, a bucket can be fitted with a small faucet to which the tube is attached. This can be suspended from the ceiling or from the rail of the litter carrier. After treating the animal, disinfect hands and apparatus thoroughly with the solution before treating another animal. Complete cleanliness is important. Lugol's solution, in a strength of 2 per cent, has been found to be desirable as a uterine douche. This solution is not allowed to remain in the uterus, but is flushed out with salt solution.

Lugol's solution of iodin is compounded as follows: Iodin 5 parts, potassium iodid 10 parts, and boiled water to make 100 parts. Two parts of this compound in 100 parts of boiled water make a 2 per cent solution suitable for uterine irrigation. Lugol's solution can be purchased from your druggist.

A 1 per cent solution of common salt in boiled water at body temperature makes a suitable irrigating fluid. A heaping tablespoonful of dry salt weighs approximately 1 ounce, and this amount in 1 gallon of boiled water gives the proper strength.

The action of the antiseptic should be noted, and if it causes straining or irritates the tender membranes of the genital organs, a weaker and less irritating solution should be used. In addition, the external genitals, root of tail, escutcheon, etc., should be sponged daily with a solution twice as strong as that used for irrigation, and this latter treatment should be given the nonaborters as well. Should the preliminary symptoms of abortion be detected, the animal should be removed from the herd and treated as above.

After treating an affected animal, be careful to disinfect hands before going near apparently healthy animals.

Retention of Afterbirth.

The retention of the afterbirth is a serious matter. It should not be forcibly removed, as the lining membranes of the uterus would be torn and a point of entry thus provided for the germs which cause blood poisoning. The uterus is very susceptible to this form of infection at such times, and injury should be carefully avoided. Clumsy and forceful manipulation of the parts may cause infection and death of the animal. The best practice is to flush the uterus twice daily with a mild antiseptic to prevent the accumulation and absorption of poisonous product and allow the membranes to come away of themselves. In all these manipulations, hands and utensils should first be thoroughly disinfected. In fact, so much special knowledge and operative skill is required that a competent veterinarian should be employed to instruct the owner before these operations are undertaken.

Breeding after Abortion.

After abortion, breeding should not again be attempted within two months, or until the discharge shall have ceased, as the uterus would not be normal and the animal either would not conceive or would abort again in a short time.

Sterility, weakling calves, retained afterbirth, white scours, and calf pneumonia frequently accompany abortion. The measures recommended will also assist in overcoming these complications.

Do not rely on drugs or proprietary medicines administered by the mouth. No effective remedies of this kind have yet been found.

Serums and vaccines are still in the experimental stage. Their effectiveness, however, has not yet been conclusively demonstrated. The department therefore advises farmers to rely for the present on the protective measures and sanitary treatment outlined above.

Let us repeat. Give this matter your earnest attention. Join your neighbors, your State, and the country in fighting this plague, and we will soon have it under control.

Write to-day to the Department of Agriculture for a Farmers' Bulletin, which gives details of the disease and its prevention and treatment.

KEEPING GOOD ROADS GOOD.

Ample Provision for Maintenance Should Be Part of Improved Highway System.

Keeping good roads good is the most important task in connection with an improved highway system, once the construction work is completed. In the United States in the past this task usually has been neglected, the improved roads in many instances being allowed to deteriorate until they became almost impassable, when they were, at heavy cost, rebuilt. That States and counties are now coming to recognize the need of careful and thoroughgoing maintenance, however, is indicated by studies of county road systems in different sections of the country recently made by the Office of Public Roads and Rural Engineering of the department.

While some of the eight counties in which intensive studies were made were found to have no provisions for maintenance and others were found to pay for upkeep of the roads out of bond-issue funds, thus creating a debt that would outlive the temporary improvement by many years, two counties in widely separated States were found in which maintenance conditions were practically all that could be desired. In Mississippi, it was found, there is a State law requiring that a special annual tax of at least 1 mill shall be levied for the upkeep of all roads constructed by means of bond issues, the fund to be kept separate from all other funds and to be used for maintenance only. Instead of the deterioration taking place on the roads of some of the counties in other States on which examinations were made, it was found that in Lauderdale County, Miss., roads built several years ago and maintained from the special fund have actually improved since their completion.

The county roads of Franklin County, N. Y., it was found, are maintained with a contribution of 50 per cent by the State and under indirect State supervision. As a result of this system, the roads have been kept up to their condition on completion. While provisions for maintenance were on the whole not satisfactory in the counties of the other States in which studies were made, this condition since has been remedied in Virginia by the passage of a State law providing that an annual tax of not less than 3 per cent of the amount of bonds issued shall be levied to provide a maintenance fund for bond-built roads.

The existence of a regulation tending to lessen damage to roads and so to reduce maintenance costs was revealed by the studies in Spotsylvania County, Va., where the county supervisors had passed an ordinance placing a relatively low limit on loads that may be hauled in wagons fitted with narrow tires and a considerably higher limit on loads for wide-tired wagons. As a result, most of the wagons using the roads of the county have been fitted with tires ranging from 3 to 6 inches wide.

INSPECT PLANTS SHIPPED BY MAIL.

Under a law passed by Congress March 4, 1915, Florida is mking arrangements for the terminal inspection of all mail shipments of plants and plant products, except vegetable and flower seeds, entering the State. California, Arizona, and Montana have already established such mail inspection services under the Federal law.

VARIETIES OF ALFALFA.

Nine Fairly Distinctive Commercial Strains—Adapted to Varying Climatic Conditions.

The increased interest in varieties of alfalfa and the need for the farmer to know whether a certain variety is suitable for his neighborhood have led to the publication of Farmers' Bulletin 757, Commercial Varieties of Alfalfa. The authors, R. A. Oakley and H. L. Westover, of the Bureau of Plant Industry, discuss in detail the characteristics and habits of the nine fairly distinctive commercial strains of alfalfa now recognized in the United States, together with their adaptation to climatic conditions. Some give the best results in the North and Northwest, while others succeed only in the South and Southwest where the winters are mild. Wherever possible, the authors have indicated methods of distinguishing the seed of one variety from another.

"Common alfalfa" is a term that is used to include all of the alfalfas that are not clearly of hybrid origin or that do not have distinct and uniform varietal characteristics, such as the Peruvian and Arabian varieties. Numerous strains are coming to be recognized in the "common" group. They are often designated by the geographic name of the locality where grown, as Kansas-grown alfalfa, Montana-grown alfalfa, and many others, or by some term descriptive of the conditions under which the crop has developed, such as dry-land alfalfa, irrigated alfalfa, and nonirrigated alfalfa.

Strains developed in the South usually produce larger yields than those developed in the Northern States, but they are less hardy. The "dry-land" alfalfa seed offered on the market has so far failed to show any noticeable superiority in ability to resist drought over that grown with an abundance of moisture.

The commercial Turkestan alfalfa has been tested quite thoroughly in all parts of this country, and in nearly every case has proved inferior to American-grown strains.

The leading commercial strains of variegated alfalfa are the Grimm, the Baltic, the Canadian variegated, and sand lucern. With the exception of sand lucern, they have been found more resistant to cold than other commercial varieties or strains and are therefore recommended for sections where winterkilling occurs frequently.

Peruvian alfalfa is not resistant to severe cold and can be grown successfully only where the winter temperature is comparatively mild, as in the Southern and Southwestern States. Under favorable conditions it outyields any other commercial strain.

Arabian alfalfa is not a satisfactory variety because of its tendency to be short lived.

As a result of numerous experimental tests the adaptations of the various varieties and strains of alfalfa have been quite definitely determined.

It is highly advisable that the farmer should learn to distinguish good from poor seed. Plump seed of an olive-green color almost invariably germinates well, while shriveled or brown seed generally germinates poorly. The presence of any appreciable quantity of weed seeds or other impurities indicates a poor quality of seed.

Owing to the fact that alfalfa does not produce seed satisfactorily under humid conditions, there is little use in trying to grow it for seed in the Eastern States.

Breeding work with alfalfa offers great possibilities, but the time and expense involved are so great that a farmer can not afford to undertake it.

COOPERATIVE GRAZING.

Farmers on Reclamation Projects Form Associations for Pasturing Beef Cattle.

Settlers on the Government reclamation projects whose farming enterprises include the production of beef cattle are finding it advantageous to work together in utilizing grazing lands adjacent to the irrigation projects. On these irrigated tracts the farm units are small—usually 80 acres or less—and the land is so valuable for crop production and the pasturing of hogs, dairy cows, and sheep, that it is not often used as pasture for beef cattle. There usually is, however, a good supply of hay and other feeds for use in wintering beef animals, so that these can be produced economically where cheap summer range is provided.

Many of the projects are located near large areas of range lands on the public domain or in the national forests, but the irrigation farmer of a small unit, working individually, finds it difficult, if not impossible, to use these lands to advantage. In order to secure good results with range cattle it is necessary that they be protected against loss from poisonous plants, disease, predatory animals, and theft, and that proper provision be made for salt, water, and forage, and for breeding. To provide this attention is too costly for the individual farmer with from 2 or 3 to 25 or 30 head of range stock.

During the past two years the department, through the Office of Demonstrations on Reclamation Projects, in the Bureau of Plant Industry, has been recommending that on certain of the projects groups of farmers owning range stock form grazing associations, for the purpose of carrying stock through the summer at low cost. Somewhat similar associations have been operating for several years in certain of the national forests adjacent to old stock-raising sections of the West.

The chief features of the cooperative plan which is being recommended include the securing of a satisfactory range for the use of the association, the employment of a herder, furnishing well-bred bulls, supplying salt, vaccination for the prevention of blackleg, and providing a form of insurance to indemnify the members for stock losses. In some cases the same association may cooperate in marketing the stock. These are things which can be done readily by an association, but which the small stockman, working alone, either can not do or can do only at a disadvantage. The associations which have been organized during the past two years are making good progress. The cost of carrying the stock through the grazing season ranges from about $1.50 to $3.50 per head, the amount per head decreasing with increased size of the herd.

With the increasing scarcity of satisfactory range, the individual irrigation farmer is finding range-stock production more and more difficult. But through cooperation the hazards and difficulties of summer grazing can be greatly reduced, thus enabling many irrigation farmers to make beef production a profitable part of their small-unit farming enterprises.

BRIEF ITEMS.

Sorghum grain is a valuable poultry feed.

The 48 States are now spending $280,000,000 a year on good roads.

Grackles and blue jays often destroy eggs and nestlings of other birds.

Diseases of animals cause losses of $212,000,000 a year in the United States. Much of this loss is preventable.

Wash water used in the churn should be approximately the same temperature as the buttermilk, or within 2 degrees of it.

More than 260,000 boys and girls were enrolled in 1915 in agricultural and canning clubs conducted cooperatively by the State colleges and the department.

It is estimated that the man who ships 20 cars of grain containing 20 per cent of moisture pays freight on 1 car of excess water, using 15 per cent moisture as a basis.

The United States Department of Agriculture has a large force which devotes its entire time to developing new by-products and methods of saving material now wasted.

The population of the United States has increased by 24,000,000 people in the last 15 years, and the number of beef animals has decreased 6,000,000 and sheep 10,000,000, while hogs have increased only 11,000,000.

SWEET POTATO STORAGE.

Seemingly Hardy Roots Need as Careful Handling as Apples and Oranges—Methods Suggested.

Sweet potatoes must be harvested and stored with the utmost care, say specialists of the department, if their production is to prove profitable. Any bruising of the roots, either in the field or in storage, will greatly increase the percentage of loss. In storage the temperature at which the potatoes are kept is also an important factor in determining their keeping qualities.

Harvesting Methods Recommended.

Throughout most of the sweet-potato producing region the harvest will take place within the next six weeks or two months. Growers should be sure before digging that the roots are mature, and they should select a time when the ground is dry and the day bright. If frost nips the plants, the roots should be dug within the next few days; and if this is impossible, the dead plants should be cut off at the ground with a hoe so that in rotting they will not carry the decay to the roots.

Care should be taken in plowing out the potatoes to avoid all bruising by contact between the implements used and the roots. The soil should then be scratched away from the potatoes and they should be left exposed for several hours to dry. Picking should be in padded boxes, baskets, or crates. The roots should be carefully placed, not thrown, into the picking receptacles. Although sweet potatoes do not have the appearance of being easily injured, they require, in fact, as careful handling as oranges and apples.

Handling should be minimized to as great an extent as possible. This makes desirable a rough sorting in the field by placing the largest potatoes in one picking container, the smallest in another, and the bruised roots in a third. In no case should sacks be used either as temporary containers or for marketing purposes. Diseased potatoes should be placed in none of the assortments. Such roots should not be left permanently in the field, however, to contaminate the soil, but should be gathered and fed to pigs.

Proper Storage Facilities.

Proper storage facilities are valuable to the grower in that they do away with the necessity of selling the crop on digging, greatly lessen the heavy losses sustained when the primitive storage method of burying the potatoes is employed; and permit holding for good prices in winter or spring. A special storage house, such as many southern farmers have built, is advocated by the department specialists. Such a structure with a capacity of 1,000 to 2,500 bushels can be built at a cost of from $100 to $500, depending on the availability of lumber and other material. The storage house should have double walls to insulate against heat and cold and a false floor to facilitate ventilation. A stove should be installed for supplying artificial heat. If bins are used they should have slatted sides, further to facilitate a circulation of air.

Sweet potatoes may be satisfactorily stored in bins, but where economically practicable it is advisable to store in crates or hampers, since such a practice reduces pressure on the roots, permits better ventilation, and confines such rotting as may start to a relatively restricted space. In some sections the potatoes are stored in the hampers in which they are to be marketed, being removed just before shipment and re-sorted.

Disinfecting Storage Receptacles.

Where storage is to be in bins or other receptacles these should, if they have been used before, be thoroughly disinfected by spraying with solutions of formalin or copper sulphate. The former should be used in the proportion of 1 pint to 30 gallons of water. The copper sulphate should be used at the rate of 1 pound to 25 gallons of water. With either solution a second spraying should be given after 24 hours.

Proper Storage Temperatures.

When first placed in the storage house sweet potatoes should be cured by being kept, by the use of a fire, in a temperature of from 80° to 90° F. This curing temperature should be maintained for from 10 days to 2 weeks and should then be gradually reduced to about 55°, and kept at as near this point as possible. After this the ventilators should be left open during the day in clear, warm weather, and kept closed during the nights and in damp or rainy weather. When the temperature in the house goes below 50° F. the house should be opened if the outside temperature is higher, or a fire should be started to raise the temperature to the desired point, since once the potatoes have become thoroughly chilled their quality is impaired and they are more susceptible to decay. In order to maintain the proper temperatures farmers should install accurate thermometers in their storage houses.

Further information on this subject may be obtained from Farmers' Bulletin No. 548.

The seed-importation act, which applies to forage-crop seeds imported from foreign countries, has been so amended as to enable the Department of Agriculture to exclude shipments that contain too high a percentage of dead seed, as well as those that are adulterated with weed seed or contain an excess of trash and dirt.

CORN INSPECTORS.

Procedure for Licensing Inspectors of Shelled Corn Under the U. S. Grain-Standards Act.

The standards of quality and condition for shelled corn which have been promulgated in accordance with the provisions of the U. S. grain-standards act will become effective on December 1, 1916. After that date only persons licensed by the Secretary of Agriculture may be employed to inspect and grade shelled corn and to certificate the grade thereof for shipment in interstate or foreign commerce. It is important that all inspectors who are qualified under the act to grade shelled corn be licensed before December 1, 1916; and in advance of the issuance of the rules and regulations of the Secretary of Agriculture under the act, the following procedure will govern the licensing of such inspectors:

General Requirements.

Applications for license shall be addressed to the Office of Markets and Rural Organization, U. S. Department of Agriculture, Washington, D. C., upon forms furnished by that office for the purpose.

The forms shall be filled out in English, in the handwriting of the applicant; shall be signed by him; shall contain a statement whether he will or will not during the term of the license sought be interested, financially or otherwise, directly or indirectly, in any grain elevator or warehouse, or in the merchandizing of grain, or be in the employment of any person or corporation owning or operating any grain elevator or warehouse, and a statement of the point or points where he expects to perform services as a licensed inspector.

State Grain Inspectors.

In case the applicant is a person duly authorized and employed to inspect and grade shelled corn under the laws of any State which has a State grain inspection department established by the law of such State, his application shall contain or be accompanied by satisfactory evidence thereof, and shall answer all questions included in the form. The Secretary of Agriculture may call for such other information as he may deem necessary. Such persons who desire a license should apply at once to the Office of Markets and Rural Organization, U. S. Department of Agriculture, Washington, D. C., for Form No. 1, "Application for grain inspector's license by State grain inspector." Blanks in the certificate of authorization and employment must be properly filled and the certificate signed by the State official having custody of the records, showing the authority and employment of the applicant, and authenticated by the

official seal, if any, of such officer. Applications should be properly executed and filed with the Office of Markets and Rural Organization at as early a date as possible in order to insure action before December 1, 1916. Upon proper showing in the application, a license will be issued without examination of the applicant.

Persons Other Than State Grain Inspectors.

In case the applicant is not a State grain inspector, his application shall contain (*a*) satisfactory evidence that he has passed his twenty-first birthday and has had at least one year's experience as an inspector or the equivalent of such experience in the actual determination of the grade of shelled corn; (*b*) a schedule of the fees which it is expected will be charged for his services as a licensed inspector; (*c*) satisfactory evidence that he will be provided with the necessary means or facilities for inspecting and grading shelled corn; and (*d*) at least three vouchers from persons engaged in some commercial or investigational phase of the handling, grading, or marketing of grain, certifying to the applicant's experience, business connections, and general fitness to perform the duties of an inspector, and the names of at least five other persons who are acquainted with the applicant's character and ability, at least three of whom shall be engaged in some commercial or investigational phase of the handling, grading, or marketing of grain. All questions in the form must be answered. The Secretary of Agriculture may call for such other information as he may deem necessary. Persons of this class who desire a license should apply at once to the Office of Markets and Rural Organization, U. S. Department of Agriculture, Washington, D. C., for Form No. 2, "Application for grain inspector's license by person other than State grain inspector." Each such person whose application is satisfactory will be notified to appear at some convenient point for examination to determine his fitness for a license; except that, in the case of any person who has been employed continuously as an inspector of shelled corn for five years immediately preceding the date of his application, a license may be issued without such examination.

Applications should be properly executed and filed with the Office of Markets and Rural Organization at as early a date as possible in order that arrangements for examinations may be made and action taken before December 1, 1916.

Good roads reduce the cost of hauling produce to and from the farm as much as 25 cents per ton-mile.

Wastes at fish canneries can be turned into a valuable fish meal for feeding cattle and poultry, according to the Department of Agriculture.

CULTURE OF RYE.

Adapted to Well-Drained Soils in Eastern Half of Country—Fills Gaps in Crop Schedules.

There are many excellent reasons for growing rye on the farm, according to specialists of the department, even though in most localities it is less profitable as a grain crop than wheat. Rye is hardier and can therefore be grown as a winter grain in cold, exposed places. It will do well on sandy, poor, or acid land. It may be sown later than wheat, thus fitting well into the farm schedule, especially when there is a rush of work in the fall. It is attacked by fewer insects and diseases than wheat, produces a more valuable straw, requires less fertilizer, and being earlier is better as a forage crop. In addition, in some sections, the production value per acre from rye actually exceeds that of wheat. This was true in the five-year period from 1910 to 1914 in South Carolina, Alabama, Texas, Minnesota, North Dakota, and South Dakota.

The production of rye in the United States is not evenly distributed, 80 per cent of the acreage being in the eastern half of the country. Of this, most is in Minnesota and the States east of the Mississippi and north of the Ohio Rivers. In the last few years, however, there has been a tendency toward the spread of rye culture to new regions. The production in the whole United States is only 3 per cent of the world's production. The largest rye crop produced in the United States was in 1915, when the yield was estimated to be over 49,000,000 bushels.

Adaptability of Rye.

Rye can be grown on almost any well-drained soil in the eastern half of the United States. One of its advantages is its adaptability. It can be used to fill gaps between other crops. Sown early or late in the fall, on land either rough or well-prepared, it can be depended upon to make a good growth in almost every instance, at the same time conserving fertility and preventing washing during the winter. It may be given the same fall and winter treatment whatever use is to be made of it, and the farmer need not decide until spring whether to pasture it, cut and feed it green, plow it under, or harvest it as a straw and grain crop. Like all other grains rye is best grown in rotation.

Soil Requirements.

Although rye will grow on very poor soils, large yields can not be secured from soils not of good fertility. The soil should not be exceedingly rich, however, for grain production, and not much nitrogenous fertilizer should be used. Stable manure is the best fertilizer. Some phosphate should be used also. Seed should be thoroughly cleaned. They also should be tested carefully, as rye loses its germinating power more rapidly than most other cereals. The rate of seeding should depend on the showing from the germination tests. When intended for grain production sowings should be made about September 1 in the northernmost parts of the country, and should range from this date to the latter part of November in the extreme South. Rye may be sown from 1 to 2 weeks later than wheat. If the rye is to be used for pasture it should be sown from 2 weeks to a month earlier than when sown for grain crops. On fertile land the fall sowing may be later than on poor land. Spring rye may be sown as early as spring oats or as soon as the soil becomes warm and dry enough to be worked.

Harvesting.

Beginning in northern Florida about the middle of May, rye ripens approximately a day later for each 15 miles to the north, generally a few days earlier than wheat. Like wheat, it is cut ordinarily with a binder. In some sections, however, especially near large cities, there is a remunerative demand for rye straw for use in bedding horses, wrapping nursery stock, stuffing horse collars, etc. Under such conditions if the straw is especially long it may be necessary to use a self-rake reaper. When the straw is to be kept in good condition a special thresher also is used in many instances.

Pests.

The principal plant pest of rye is wild onion or garlic. The onion bulblets are about the same size and shape as rye grains, and, reaching maturity at the same time, are often threshed out with the grain. The presence of the onion bulblets reduces materially the price that may be secured for rye. Land badly infested with onions should not be used for small grains. If such land must be used, the rye should be sown late, the land being plowed and prepared just before planting.

The diseases which may attack rye include stem and leaf rust, flag smut, anthracnose, and ergot. The latter is the most serious. It is dangerous to feed rye affected with ergot to live stock. Treatment of rye seed with formaldehyde, as for oats and wheat, will reduce the likelihood of the occurrence of most grain diseases. Ergotized grains may be removed by passing the seed through a 20 per cent solution of common salt, the diseased grains floating while the normal grains sink.

Copies of Farmers' Bulletin 756, describing the culture of rye in the eastern half of the United States, recently issued by the department, may be secured free of charge upon application.

HOT SCHOOL LUNCHES.

Many Schools Throughout Country Provide for Serving Hot Luncheons Regularly.

In the belief that a hot dish at noon, if only a bowl of milk soup or a cup of good cocoa, is highly important to school children, many schools throughout the country are either supplying a regular hot luncheon to school children, or are providing a single hot dish with which the children coming from a distance can supplement the cold food in their lunch baskets. In most cases the children bring money with them and buy the dishes at cost price. Those in charge of the lunch room see to it that nothing is for sale that would be hurtful to the children, and direct them in their purchases so that they will not buy merely sweets or pastry. This overcomes the danger of the child's spending his money unwisely or patronizing an insanitary shop.

To assist schools wishing to undertake this desirable activity, either through teachers or groups of cooperating mothers, the home economics specialists of the department, in Farmers' Bulletin No. 712, suggest the following economical and easily prepared bills of fare for the school lunch:

1. Vegetable-milk soup, crackers, rolls, fruit, plain cake.
2. Meat and vegetable stew, bread and butter, sweet chocolate.
3. Boiled custard, lettuce sandwiches, fruit, cookies.
4. Dried codfish chowder, crackers, fruit, maple-sugar sandwiches.
5. Bean soup, crackers, baked apples, sponge cake.

In addition the school can serve hot cocoa, cooked fruits, berries, and liquid or other foods which it is difficult to carry in baskets. Almost any school by the use of paper cups can make good milk available to children at noon. The school can also place on sale good simple cookies, zwieback, or crackers supplied from the outside.

As the serving of an entire luncheon calls for considerable equipment and dish washing, many country schools will find it easier to supply simply o ne hot dish, a cup of cocoa or a glass of good milk. The milk could easily be provided through arrangements with parents or near-by farmers, and is particularly useful to children in warm weather when it is impracticable for them to bring bottles of milk in their baskets.

In a number of city schools the pupils are provided with trays and help themselves to foods placed on a counter. At the end of the meal they return the trays and dishes and thus reduce the amount of help required. In some large cities a trained supervisor is employed to regulate all the public-school lunch rooms. In other schools the preparation of lunch is made a practical exercise for classes in cooking and domestic science.

It is in the small country schools with only one teacher, however, that the midday meal presents the most difficult problems. Only a teacher with ingenuity and enthusiasm for her work can carry out the plan, and even with such a teacher the active cooperation of parents is highly important.

The simplest equipment includes a large kettle, measuring cup and spoons, paring knife, mixing spoon, dish pans, and towels. The pupils should be willing to bring plates, cups, bowls, and spoons from home. The boys and girls can easily make curtained shelves for the utensils. A fireless cooker, which permits the preparation of meat stews, meat and bean soups, and cereal mushes, can easily be made by the pupils as a class exercise.

The older girls, taking turns in groups, commonly prepare the special dish for the day. In good weather the luncheon can be served out of doors, but at other times it may be necessary to serve it on the children's desks. This will not be objectionable if the desks are first cleaned and covered with clean paper or paper towels, and if the building is well ventilated and screened against flies. Safe water for drinking, washing hands, cooking, and washing dishes is essential, and any water that is at all doubtful should first be boiled.

TO ERADICATE BEDBUGS.

Practical Information on Dealing with This Household Pest.

Those who are troubled by bedbugs will find practical information as to how to deal effectively with these pests in Farmers' Bulletin 754, "Bedbugs," recently published by the department. In this bulletin C. L. Marlatt, of the Bureau of Entomology, makes clear the habits of these insects which have a bearing on their eradication, and suggests a number of simple household measures, as well as more radical methods, of getting rid of them. The author calls attention especially to the fact that these insects will migrate from an unoccupied to an inhabited house and points out that the fact that they ordinarily hide in the daytime makes it necessary to apply the insecticides in cracks in walls and floor and crevices under wall paper, where the insects ordinarily are concealed and lay their eggs. Information as to the ability of bedbugs to withstand cold and to go without food for long periods should be especially useful to those intending to move into houses long untenanted.

Of the simpler remedies the entomologist says that benzine, kerosene, or other lighter petroleum oils introduced into crevices by means of a brush or syringe are perhaps the most efficient. The bulletin also gives directions for fumigation with sulphur or other chemicals, which will be found economical and effective in cases of general infestation.

Those who have been bitten will find applications of peroxid of hydrogen useful in allaying irritation. Tincture of iodin, in its ordinary or double strength, is also a good counterirritant for use in cases of fleas, mosquitoes, bedbugs, or other insect bites. Iodin, however, should be used with caution on the tender skin of small children and on those who are affected with or disposed to eczemic disorders.

The bulletin will be supplied free by the department as long as the supply lasts.

FALL PROPAGATION OF ROSES.

Climbing roses are propagated mostly by hardwood cuttings made in the fall. Many cut-flower roses may be propagated in the same way.

Hardwood cuttings are taken from the dormant wood of winter, while softwood, or greenwood, cuttings are taken when the plants are in active growth. To make a hardwood cutting, good, strong, well-ripened shoots of the past summer's growth should be selected. These are better if cut between the time the leaves fall and freezing weather. If left until after cold weather there is danger of injury from freezing. They should be cut into pieces of 5 or 6 inches, with the upper cut just above a bud, and should be tied in bundles with raffia or with string that does not rot easily if exposed to dampness. After labeling plainly they should be buried in moist sand, tops down, and placed in a cool cellar or buried in the open ground below danger of frost. They should be planted in the open ground in the spring about or a little before corn-planting time, so that one or two eyes, or not over 1 inch of the cutting, is above the ground, which will leave 4 or 5 inches in the ground. Care must be taken not to injure the calluses that have formed while the cuttings were buried. Sometimes better results are obtained by planting in partial shade.

Frequently cuttings made in winter or early spring do nearly as well as those made in the fall, but in the North there is always danger of the wood being injured during the winter.

It costs more to produce clean milk than dirty milk. The difference in cost is health insurance.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., NOVEMBER 1, 1916. No. 13

RUSTS OF GRAIN CROPS.

Department and Experiment Stations Actively Engaged in Devising Methods of Combating the Disease.

A very serious epidemic of stem rust ("black rust") of wheat which occurred the past season, especially in the spring-wheat States, has forcibly brought to light the heavy losses which may be caused by this disease. The following is a brief description of the present status of our knowledge of the cereal rusts and of the efforts which are being made, especially by the department, to investigate and combat them.

Kinds of Rusts.

Each of the common cereals, including corn, is subject to the attack of rust. As viewed by the farmer, this rust looks somewhat similar in all cases. In reality, however, there are several different kinds of rust which are distinct from each other and which vary in their virulence of attack. Wheat, for instance, is known to have in this country three kinds of rust: Leaf rust, stem rust, and a yellow or stripe rust. Oats is commonly afflicted with both a leaf rust, sometimes also called "crown rust," and a stem rust. Barley and rye also have leaf and stem rusts. On corn, however, only one kind of rust is found and this is rarely serious.

The oat rusts are very commonly present and sometimes cause severe epidemics in certain oat-growing States. Of the wheat rusts the most important one at the present time is the stem rust, commonly called the "black rust," which was the cause of the epidemic of rust in the spring-wheat States this year. The leaf rust of wheat is almost always present every year and is familiar to most farmers as "red rust"; and while it undoubtedly does at least a slight damage, it seldom if ever causes a severe loss. The yellow, or stripe, rust of wheat has only recently been discovered in this country. It also attacks barley and certain wild grasses and has been found in the western part of the United States, but not as yet east of the Rocky Mountains except in eastern Wyoming. It is a common rust in Europe and considered a serious disease. If it continues to spread in this country, and if it proves as serious an enemy to wheat here as it has in Europe, it is possible that it will add materially to the rust troubles of our cereals.

The life histories of the rusts are sometimes complex. This is especially true of the most important of the wheat rusts, namely, the stem rust. It may pass a part of its existence on an ornamental shrub known as barberry (*Berberis vulgaris*) where it produces rust spores in May or June. These rust spores may infect wheat or other cereals. The stem rust may also in its red and black stages live on many common wild grasses. It is also a fact that the stem rusts of the other cereals may also pass their spring stage on the barberry plant. Although the rust may live over the winter on grass plants or may be brought up in the early spring from the South without the intervention of barberry plants, nevertheless, *barberry plants serve as an active means of spreading the rust in a very vigorous fashion. The common barberry should not be permitted in the neighborhood of any grain-growing farms and, in fact, it would best be eliminated entirely from the grain-growing States.* The small-leaved barberry (*Berberis thunbergii*), called also "Japanese barberry," is not attacked by the rust and may be safely planted.

Rusts of Grasses.

Since the cereal rusts may also live on grass plants, a considerable study has been undertaken to find out the exact relations between the rusts found on wild grasses and those on cereals. The matter is found to be somewhat complex. There can be no doubt that the grasses have a marked influence on the prevalence of rust and that wheat rust epidemics are considerably promoted by the common wild grasses. The different rusts are found, however, only on certain kinds of grasses and these relationships, together with the possible effect of the grasses on the virulence of an epidemic, are now being investigated.

Rusted Seed.

Another extremely important question under investigation is that of rust in the seed. It has been known for some time that in badly rusted fields the rust is often present even on the tips of the wheat seeds. It has been thought by some that this rust might be transmitted by the seed to the young seedling and thus start the epidemic again in the following spring. Evidence from field and greenhouse experiments conducted up to the present time does not support this view, but conclusive evidence is dependent on further investigation.

As far as is known at the present time it is safe to take seed from a rusted field. It is

(*Continued on page 7.*)

66194°—16

CITY MARKETING.

Methods Employed Largely Influence the Prices Paid to Producer and Cost to Consumer.

The farmer has a direct interest in the efficiency of the marketing organization in cities, since lack of efficiency may be reflected in the poor prices he receives for his products. Sooner or later the great majority of the perishable produce raised on the farm for sale finds its way to the cities for distribution; and whether it passes from the ownership of the farmer before or after reaching such centers, the sales usually are based on city-quoted prices. Many farm products, especially perishables, are consigned to city commission merchants to be sold for what they will bring, the prices received in such cases being directly dependent on their city market values. Prices based on these values are paid also when such products are sold by the producer directly to wholesalers or jobbers after shipment to city trading centers. Even the products which the farmer sells at the nearest railroad station are bought largely for consumption in cities and so are paid for, in most cases, at prices which are dependent on those prevailing in city markets. The city, therefore, through the operation of city demand in relation to supply, largely determines the prices which the farmer receives for his perishable products.

The purely local marketing organizations of cities are more important elements in shaping these prices than is generally recognized by the farmer. Many perishables will not stand reshipment, and once in a city must be sold for the prices prevailing there. If, after products reach the cities, there are high marketing costs due to wasteful or inefficient marketing methods, there must be greater margins or differences between the prices received by producers and those paid by consumers. The economic machinery for marketing farm produce is such that many of the losses expressed in abnormal margins may be visited on the producer in the form of low buying prices, while others may be charged to the consumer through high selling prices. If, on the other hand, city marketing costs may be reduced through the employment of improved methods, economic laws should operate under normal conditions to give higher prices to producers and lower costs to consumers, while the movement of produce should be

accelerated sufficiently to make marketing more profitable at the same time to wholesale and retail dealers.

Direct Marketing Facilities.

These considerations in regard to the relation of city marketing to the farmer have to do with the marketing of farm produce in general by all farmers. There are, in addition, more specific ways in which the marketing machinery of the cities may affect the farmers living in their vicinities. Farmers within varying distances of fairly large cities, the distances depending to a considerable extent on the condition of roads, may haul their produce to such centers by wagons and market it directly with profit if proper facilities are available. Where such facilities have been furnished, the farmers may assemble their wagons at a particular market point and sell at retail to consumers who gather there to buy; they may stop at a point devoted to wholesaling and dispose of their wares to various kinds of dealers; or they may drive from house to house throughout a portion of the city, retailing to housewives.

Such methods of marketing are a distinct advantage to many general farmers living near cities who grow small amounts of truck and to the more extensive truck growers in such territory who do not specialize on particular products. Ordinary methods of marketing through shipments to wholesale dealers and commission merchants can seldom be employed profitably unless the producer ships given products in substantial amounts or associates himself with other producers for assembling shipments large enough to be handled economically by rail. Direct marketing in cities, therefore, opens up to the small farms of the surrounding country profitable lines of production which otherwise could not be followed, or results in the sale of surplus products which otherwise might be lost.

Studies in City Marketing.

Because of the importance of city marketing to the farmer in these various ways, the Office of Markets and Rural Organization of the department has taken up as one of its important projects, city marketing and distribution. Through this project the aim of the office has been to study marketing conditions in various cities; to determine as accurately as possible the sources of loss and waste in city marketing and the methods by which such losses and wastes may be eliminated; to develop general plans for efficient marketing facilities of various kinds for cities; and to aid by specific suggestions such cities as may seek assistance in improving their marketing conditions. In this work the office has sought to benefit alike all parties to marketing transactions by attempting to remove obstacles from the market channels so that a more rapid, more even, and less wasteful flow of commodities from producer to consumer will be possible.

The rail and water terminals in cities constitute the most important factors in their marketing machinery for farm produce, since the vast bulk of such products consumed in cities must be brought in by carload or boatload lots. Recognizing that such terminals are not arranged to best advantage in most cities and that to this are due some of the high handling costs and some of the important losses of commodities, the Office of Markets made terminal facilities the subject of one of its earliest investigations in city marketing. It has found that the uneconomic arrangement of terminal facilities is most pronounced in the larger cities, but that the fault is common to a greater or less degree in all cities of importance.

Too Many Terminals.

The general fault, it has been found, is the existence of numerous terminals separated from each other and from the wholesale store district or districts. In some instances as many as a score of separate terminals exist in a city. Shipments for a given dealer may arrive at a number of these terminals on the same day, necessitating much more costly cartage or the employment of many more salesmen than would be necessary if but a single terminal for perishables existed and the wholesale dealer had his store located conveniently to it. Every extra handling, every square of extra cartage, and every additional salary paid increases the labor cost of marketing, which must come out of the margin between the producer's selling price and the consumer's buying price. The extra handling, the jolting due to long hauls, often over rough cobblestone streets, and the delay in getting the products into retail trade channels greatly increase the losses due to bruising and decay of perishables, and so add still further to the marketing costs.

The aggregate losses and additions to marketing costs, due to inefficient terminal facilities, are so great in the average large city that market specialists believe it would be a feasible plan in many instances for the communities to promote and finance a separate terminal for perishables which would be connected with all railroads entering the city. Such a terminal might be built especially for the purpose or might be obtained by securing an existing railroad yard and warehouse which could be opened to the receipts of all railroads. It is also desirable where perishables enter a city by both rail and water that the terminal be established at a point convenient to both water and rail transportation facilities. A still more complete arrangement would call for a wholesale farmers' market near by, at which could be assembled produce brought from the surrounding country by wagons.

Terminal facilities of the type outlined might be owned by municipalities, railroad companies, private corporations, or associations of dealers. At present terminals even approaching in form those described exist in only a very few cities of the country. Agencies in many cities, however, have taken up a study of the local marketing situations with a view to centralizing and otherwise improving terminal facilities for perishables. In this work the Office of Markets is cooperating with several of these local agencies and committees.

Public Markets in Cities.

Study has also been devoted by the office to the facilities which have been provided in cities especially for direct marketing by farmers who haul their produce in by wagon, and to marketing facilities for perishable food products in general conducted more especially for the benefit of consumers. Such facilities, known usually as public markets, have been furnished in some form, it has been found, in nearly 200 of the 584 cities of more than 10,000 population existing in the country. Three types usually are recognized—the farmers' retail curb or shelter market; the farmers' wholesale curb or shelter market; and the public inclosed or booth market.

Farmers' retail markets often consist only of designated sections of a street on which farmers assemble with their wagons of miscellaneous farm produce and sell in small amounts directly to the consumers who come there to buy. The more permanent farmers' retail markets, however, are located on plots of ground set aside for the purpose and fitted with substantial sheds, under which the farmers drive their wagons. Such markets are, in most cases, conducted under municipal control and a nominal fee is charged for the space occupied.

Farmers' retail markets, whether of the curb or shelter type, are not recommended for all towns without qualification. The size of the community and numerous other local considerations must determine the practicability of the enterprise. There must first be a sufficient number of farmers in easy reach of the town who will bring supplies for the market. There must be in the town a sufficient demand on the part of consumers for such a market, where, by going in person and carrying away their goods, they may obtain produce fresher than that available at the average retail grocery store and usually at somewhat lower prices. A substantially large proportion of the consumers of a town can not be depended upon as customers of such a market; for many housewives, weighing the advantages to be gained by such personal marketing against the trouble and time it would require, prefer to depend on neighborhood stores, where orders may be given quickly in person or by telephone and where the expensive credit and delivery service may be obtained. In most cities of fairly large size, however, the number of consumers wishing to buy directly from producers is usually large

enough to support a farmers' retail market. From the producers' point of view, the farmers' retail market offers perhaps the best outlet for assorted produce raised in relatively small amounts.

Farmers' Wholesale Markets.

Farmers' wholesale markets often may be a success in towns too small to support retail markets; for in markets of the former sort sales are made to retail stores, hucksters, hotels, restaurants, boarding houses, and the like—agencies which usually seek out the most profitable buying methods. When the local markets are glutted and these usual customers do not take all available supplies, farmers utilizing the public wholesale lines often turn their loads of produce over to commission merchants for these agencies to sell locally or to their out-of-town trade.

The usual sales on farmers' wholesale markets are by crate, bushel, or other large unit, and sometimes by entire load. Farmers conducting relatively extensive truck-growing operations in the neighborhood of cities may find that the farmers' wholesale markets offer a profitable outlet through which to dispose of their produce. In the vicinity of some cities, even truck-growers having a sufficient output to make carload shipments by rail find it more advantageous to market their products by motor truck or wagon through the near-by farmers' wholesale market. Such markets, like the farmers' retail markets, may be merely designated sections of streets, or may be substantial shelters on market plats. They are usually under municipal control.

Inclosed Public Markets.

Inclosed public markets in cities, while primarily for the benefit of consumers, are also of interest to farmers, since many of the latter rent stalls therein. Such markets are practically an assemblage of small specialized retail stores selling meats, vegetables, fruits, dairy products, and other food substances, provided with shop facilities by the municipality or a semipublic agency, at a small cost. The theory on which such markets are maintained is that by a reduction of rents and other overhead charges, the elimination of delivery and credit costs in many cases, and the attraction of a large number of potential purchasers, the boothkeepers will be enabled to sell fresher goods at lower prices than the individual retail stores in the community, and that the market as a whole will offer an assortment of attractive produce larger by far than can be carried by the smaller stores. Much the same class of buyers must be looked to by such a market as those depended upon by the retail farmers' markets. In fact, the two types of markets—the open and inclosed—are combined in one unit as a rule.

The studies that have been made of the various kinds of market institutions here discussed have enabled the Office of Markets and Rural Organization to offer an advisory service to cities, truck growers, and produce dealers' organizations, which has proven very helpful. As a rule, when a community desires to improve its marketing facilities, it does not know how to proceed efficiently and economically. It is to meet situations of that kind that the office, upon the request of responsible parties, will make a survey of local conditions and recommend as far as feasible the plan of procedure which appears advisable. The office also is enabled to submit rough plans for modern market structures, together with estimates of their cost, these to be used as a guide by the local architects.

This service work has been carried on so far in some 25 or more cities in 13 States, and the widespread demand from other places is an indication of the general interest which municipalities are showing in marketing questions. While this outlines but one phase of the work being taken up under city marketing and distribution investigations, it has occupied the major share of attention so far. As soon as time permits, tudies will be extended to include numerous other agencies and methods related to the marketing problems which our cities present.

PLANT QUARANTINE WORK.

Dangerous Diseases and Insect Pests Found on Imported Nursery Stock.

As a result of the work of the Federal Horticultural Board, a number of insect pests and diseases have been detected recently in nursery stock imported into the United States and the dangerous material has been rendered innocuous. These discoveries include an empty cocoon of the gipsy moth on apple stock from France; 8 egg masses of the same insect on arborvitæ from Japan; 2 nests of brown-tail moths on fruit stock from France; dead larvæ of the pink boll worm in cotton seed from China; mango weevils in mango seed from Siam; several scale insects on olive stock from Greece, coconut plants from Honduras, and cinnamon from Jamaica; citrus canker on citrus stock from Java; and numerous other insect pests and plant diseases.

The Federal Horticultural Board carries on its work through its own agents and through State horticultural inspectors who act as deputy Federal agents. At least one port of entry for nursery stock has been designated in each coast State, and at the most important of these Federal agents are stationed. The bulk of the importations on the Atlantic coast come through New York, while most of those on the Pacific coast enter at San Francisco.

Most shipments brought in are from countries which maintain nursery stock inspection within the meaning of the Federal plant-quarantine act. Such stock, if accompanied by a certificate of inspection of the shipping country and if entry has been permitted by the Federal Horticultural Board, need not be examined on entry into the United States, but is permitted to be sent on to the consignee. Both the importer and the Federal Board notify the inspectors of the State to which the shipment is made, however, and examination of the shipment is made after its arrival in such State. Many of the insects and diseases found are on stock imported in this way.

Shipments of nursery stock from countries not having an approved inspection service can be brought in only under special permit, and in small quantities for experimental or scientific purposes. All such shipments must be examined at the port of entry before admission to the United States.

Many of the examinations of plant material are made at the central office of the Federal Horticultural Board in Washington, where excellent facilities for the work have been provided. When diseases or insect pests are found, the affected portion of the material is removed, or the whole is subjected to cleansing or fumigating treatment, which will place the material in condition for use without danger of spreading injurious pests. Complete card records of the findings of the specialists are kept and have largely facilitated the work by furnishing suggestions as to the types of disease and insects to be expected from the various countries, the kinds of treatment which have proved effective, etc.

DAIRYING INCREASES IN SOUTH.

An indication of the hold which the movement for diversification has taken in the South is seen by dairy specialists of the department in the growth of the cattle division at the Louisiana State Fair in four years from 25 head exhibited to 400. This fair, in a section heretofore not well supplied with dairy cattle, stood second last year among the Jersey shows of the United States.

Other indications of diversification by development of the dairying industry are found in the organization in the South last year, with the assistance of the Dairy Division of the department, of three bull associations and three cow-testing associations, the purchase of 927 head of cattle, including 166 bulls, and the establishment of two additional college creameries. An example of what the development of dairying means to southern communities is pointed out by a specialist in Alabama where practically all the cream supplied to the creameries of the State is produced by native cows. One plant in the boll-weevil territory of the State produced last year 129,000 pounds of butter, worth $39,000. This represents an asset present before the construction of the creamery, but largely wasted or improperly handled at that time.

INSECTICIDES PURER.

Manufacturers Meeting Requirements of Law—Marked Improvement in Quality of Preparations.

That the insecticide and fungicide act of 1910 has resulted in marked improvement in the quality of insecticides and fungicides entering interstate commerce is shown by the annual report of the Insecticide and Fungicide Board of the department for the fiscal year ended June 30, 1916. Persistent sampling of four of the leading substances used in spraying shows a marked reduction in the number of violations of the act compared to preceding years. In 1915 only 8 per cent of the samples of lead arsenate taken were in violation of the act, whereas in 1911–12, 60 per cent violated the law. Similarly the violations found in lime-sulphur solutions had fallen from 94 per cent to 14 per cent, and Bordeaux mixture from 98 per cent to 36 per cent. Only 19 per cent of the shipments of Paris green examined showed any violation, whereas in 1911–12, 28 per cent of these shipments were objectionable.

While these results are probably due partly to the effect of deterrent prosecutions, they are due in even greater measure to the assistance the department's scientists have accorded to manufacturers in making their products of standard strength and to the growing practice on the part of manufacturers of adapting themselves to improved methods and tests.

In this work during the past year, the inspectors collected 1,487 samples of different shipments. Of these, 190 were of insecticidal preparations for household use and 221 were of disinfectants, germicides, and bactericides for the prevention of diseases of human beings as well as of domestic animals. The department during the past year has given particular attention to the prevention of the sale in interstate commerce of products recommended for household use which are either impotent or the value of which is misrepresented on labels. Many samples of arsenates, Bordeaux mixtures, sulphur, and other preparations also were taken.

In preventing the importation of misbranded or adulterated insecticides, the Insecticide and Fungicide Board collected 35 import samples. In the case of 5 preparations it was recommended that entry into this country be entirely forbidden or that the consignments be released only after being correctly labeled. In 9 other cases it was recommended that future shipments be detained. The remaining samples complied with the law.

The board devotes considerable attention to investigational work for the determination of the value of various commercial insecticides and fungicides. It announces that it has under way tests of the merits of commercial dust and liquid sprays in the control of insects and diseases. These will include tests of articles composed of finely ground sulphur in combination with arsenate of lead, with a diluent such as finely ground lime or gypsum. The board also is investigating the value of different commercial pyrethrum powders, tobacco powders, nicotin solutions, etc., when used as sprays, dusts, or fumigants. Experiments have been made to determine the action of potassium cyanid and other substances in the control of insects and plant diseases when injected into the tissues of plants.

THRESHER DUST EXPLOSIONS.

Destructive Fires Heretofore Occurring Mostly in Northwest Reported from New York.

Explosions and fires in threshing machines, due to grain dust, have been occurring in considerable numbers during the present threshing season in New York, according to reports received by the Bureau of Chemistry of the department. Such fires have been particularly destructive owing to the custom in the East of threshing in barns.

Up to this season reports have indicated that thresher explosions were confined largely to parts of Oregon, Washington, and Idaho. Because of the occurrence now of the explosions and fires in considerable numbers in a widely separated part of the country and reports in the past which have shown scattering explosions in still other sections, officials of the department feel that owners and operators of threshing machines in all parts of the country should have their attention called to the danger which may threaten their property and to the steps which have been taken by the department to make protection possible.

Protective Device Invented.

As a result of investigations of the explosions in threshing machines conducted by the Bureau of Chemistry and the Office of Public Roads and Rural Engineering, a fire extinguisher has been developed for installation on the machines. This device operates automatically when explosions or fires occur, spraying the interior of the machine with liquid. Tests at Arlington, Va., showed the device to operate satisfactorily in every case, and recent field tests with smutty grain in eastern Washington and northern Idaho, carried out by specialists of the Office of Public Roads and Rural Engineering, have been equally successful. In these field tests with threshing machines, explosions or fires occurred in the course of threshing operations, and in every case were promptly extinguished by the automatic device before any damage was done to the machines. Even frayed sacking in the interior of one of the machines was not scorched.

The automatic fire extinguisher designed by the department will be patented for the benefit of the public. Working drawings from which the device may be built have been prepared and may be obtained by interested grain growers, thresher owners, and operators, on application to the Office of Public Roads and Rural Engineering of the department.

FALL GARDEN CLEANING.

Cut and Burn Diseased Annual Plants—Remove Vegetation That May Harbor Insects.

Garden cleaning in the fall is as important in its way as housecleaning in the spring, whether flowers or vegetables make up the garden plat. The achievement of garden cleanliness at this season will often do much toward insuring healthiness and thriftiness of plants during the next growing season. The foliage and branches of plants which have been attacked by disease or badly infested by insect pests should be cleaned up especially well and burned.

If it is possible or desirable to clean away plants from some portions of the garden before frost, such areas may well be sown to rye as a cover crop, the growth to be turned under in early spring. Incidentally, also, the patches of green will give the otherwise bare garden a cleanly and more cheerful appearance during the winter.

It is after frost that cleaning is most needed in the garden. When annual plants have been nipped, those that may harbor disease or insect pests should be cut down or dug up and burned. If the soft-leaved plants which will rot easily are free from disease and insects they may be turned under advantageously at this time. It is not well, however, to turn under tree leaves, especially such tough leaves as those from oaks. These make valuable compost when rotted, but usually require two years for proper decomposition. They should be collected and placed in a compost pile or pit maintained in a convenient location. Soil, wood ashes, lime, and fresh manure should be mixed in the compost heap.

The fall is the time also to cut down asparagus bushes. This should be done after the foliage dies. The old canes of black raspberries also should be cut out at this time. If there is reason to believe that the trimmings harbor disease spores or insects, they should be burned. Rhubarb leaves should be removed in late fall and the crowns mulched with straw or manure.

LIVE STOCK SURVEY.

Marketing Methods Vary Throughout Country—Cooperative Associations Becoming Important Factors.

Marked variation in methods of marketing meat animals in different sections of the United States and in methods of marketing different classes of animals in the country as a whole has been found by specialists of the department from a survey of the live-stock marketing conditions of the country. The data obtained by the survey have been published as Part V of a report of an exhaustive study of the meat situation in the United States.

The three general methods of marketing found to be in most common use are: Shipping to the large centralized markets, selling to local butchers and packers, and the sale of farm-prepared meats to dealers or consumers. The bulk of the animals from the Central States, it was found, is sold through the centralized markets, while some form of local marketing predominates in the extreme eastern, western, and southern sections.

The great central markets handle four-fifths of the sheep and lambs, two-thirds of the hogs, and approximately one-half of the beef cattle. For local slaughter about one-third of the beef cattle, one-eighth of the sheep and lambs, and one-twelfth of the hogs are sold. Nearly one-third of the hogs and about one-tenth of the beef cattle and one-twentieth of the sheep and lambs are slaughtered on farms and ranges. Relatively more sheep are shipped in carload lots by owners than any other class of live stock. Cattle, hogs, and calves follow in the order named. In sales to local buyers hogs lead, with calves, cattle, and sheep following in order.

The study discloses that the time of buying stockers and feeders and the selling of finished animals is restricted too generally to a few months of the year. Should stock-feeding operations be better adjusted to market conditions, a decided influence toward a more even distribution of the supply would be the result.

Cooperative associations of cattle raisers are becoming an important factor in marketing, the report shows. Seven hundred and fifty organizations which market cattle in a cooperative way now exist in 15 States. Four hundred and thirty of these organizations are primarily live-stock shipping associations. The greatest activity of this sort was found in Minnesota, where 215 cooperative live-stock shipping associations are located. The department specialists declare that these associations bring greater returns to the farmers because of the reduction of marketing expenses and the realization of the prevailing prices at the centralized markets, and that they are also valuable because of their educational features.

The system of centralized live-stock markets in the United States is the largest single factor in the marketing of meat animals. It is noteworthy that this system is peculiar to the United States, no other country having developed such markets for their live stock. Not only is live stock sold for slaughter at the centralized markets, but a large proportion of stocker and feeder cattle also passes through these market centers.

The chief outlet for food-producing animals in this country, the study discloses, is wholesale slaughtering and meat packing. Such industries usually are associated with the great centralized markets. More than 1,200 slaughtering and meat-packing establishments were operating in the United States in 1914, and turned out products worth $1,651,765,424. The specialists report that one of the striking features of the industry is the concentration of ownership. Packing establishments buy directly from the producer in California to a greater extent than in any other State or section. This practice, which, in the opinion of the specialists, will continue to be important in those parts of the country remote from centralized markets, is most characteristic of the western group of States in general. There is a decided difference of opinion among producers, marketmen, and packers as to the effects of this practice in sections supplied with central markets on the general market prices of live stock and on the prosperity of cattle raisers.

Municipally owned or controlled abattoirs are becoming increasingly important in the local marketing of live stock, the report shows, and are displacing rapidly the old type of slaughterhouse. Public abattoirs have been established in 22 cities and 13 States. Local conditions should determine whether or not a city should build its own abattoir, and a thorough examination of conditions, therefore, should be made before definite action is taken.

Great variations were found to exist in the losses of and damage to live stock in transit on different railroads. On one road the claims paid amounted to 19 per cent of the revenue during a certain period, and on another to less than 5 per cent. The total claims for such loss and damage in 1913–14 on 27 railroads were $1,245,477.81. The average rates on live stock for the years 1911 to 1913 were found to be 10 cents per hundred pounds for eastern or official territory, 11.9 cents for southern territory, and 14.9 cents for western territory.

The correlation between average live stock and meat prices over relatively long periods is closer than is generally understood. When the price of live stock rises or falls, meat prices tend to change in the same directions, but the meat prices are not subject to abrupt daily fluctuations, which are one of the most adverse features of live stock market conditions.

In order to secure information as to the relative cost of the different factors or steps in the processes of marketing animals and the proportions of the final price reaching the farmer and other parties to the transactions, the specialists traced several typical lots of beef cattle from producer to consumer, both through centralized markets and where the animals were disposed of locally. In the former case the farmer's share of the gross returns ranged from 54 per cent to 85 per cent, while from 2 per cent to 5 per cent went to pay market expenses, 2 per cent to 9 per cent was received by the packers, and 8 per cent to 33 per cent by the retailers. In the local sales, from 62 per cent to 84 per cent of the gross returns was received by the farmer and from 15 per cent to 38 per cent by the retailer. The detailed figures indicate, however, that even when account is taken of the fact that lower grade stock is sold locally the returns from such sales are not as great relatively as those from sales through centralized markets.

BRIEF ITEMS.

Mottled butter is due largely to uneven distribution of salt.

Operating a gin at rapid speeds injures the fiber of cotton by cutting it.

The three C's for caring for milk in the home are: Keep it Cold, Covered, Clean.

Oats watered to make them weigh more can not legally be shipped in interstate commerce.

About seven thousand elk were fed last winter at Jackson Hole, Wyo., by the Biological Survey.

Of 16,700 cows tested through 47 Wisconsin cow-testing associations last year, 3,375 were disposed of as unprofitable.

War conditions in Europe have resulted in a very noticeable falling off in the importations of birds, particularly canaries.

Congress has appropriated money for experiments looking to the increase of production of sugar-beet seed in the United States.

Regions having a semiarid climate can produce alfalfa successfully in nearly all types of soil and through a wide range of temperatures.

The Department of Agriculture has a staff of more than 16,000 people devoting their whole time to the improvement of agriculture, the investigation of marketing problems, and the enforcement of Federal laws.

Bull associations reduce the cost of the services of a pure-bred bull for the dairy herd. The average annual cost of service in a large number of associations investigated by the United States Department of Agriculture was $3.48 for each member.

POTATO BREAD.

Boiled Potatoes Mixed with Flour Make a Product as Nutritious and Palatable as Ordinary Bread.

Excellent bread can be made by using 3 pounds of boiled and mashed potato and 2¼ pounds of good bread flour, according to the baking specialists of the department. The bread so compounded has a rich, brown crust and tender and elastic crumb. It has an appetizing odor and a very agreeable taste, which is preferred by many to that of bread made wholly from flour. When made according to the directions given below, potato bread contains more mineral matter, fiber, and moisture, but otherwise in composition and nutritive value is practically the same as ordinary bread. Its higher moisture content helps to keep it fresh several days longer than ordinary bread. In localities where there is a surplus of potatoes or where they are very cheap, potato bread costs less to make than all-flour bread, and, in general, is a good way in which to utilize cull potatoes in a palatable food product. Even, however, where the relative market prices of potatoes and flour are such that there is no economy in substituting potato for flour, the individual flavor and keeping quality of potato bread make it desirable as a variant in the family diet.

Potato bread has long been known to housekeepers, but recently there has been a revival of interest in the subject. Such bread is made by mixing a larger or smaller amount of cooked and mashed potato with the flour, the recipes housekeepers use varying considerably. More recently other ways of using potatoes in bread making have been devised, and the European bread now referred to as "potato bread" is very commonly made with a so-called "potato flour" prepared from potatoes, using about 10 parts of this with 90 parts of wheat flour or a mixture of rye and wheat flours.

As potato flour and dried potato flakes are not accessible to the American housewife, the specialists conducted a series of successful experiments in the use of boiled potatoes with flour, undertaken to find out the maximum amount of potato which can be used and yield a presentable loaf and to provide the housekeeper with carefully tested and standardized recipes which will help her to avoid failures and to secure uniformly good results in making such bread.

It was found that a mixture of boiled potatoes and wheat flour in the proportions given in the accompanying recipes gave a very desirable loaf, a trifle smaller than that made from all flour, but wholesome and nutritious. Figured to a basis of equal moisture content, the boiled potato would represent 25 per cent and the flour 75 per cent of the mixture.

The following methods for making potato bread, worked out in the baking laboratory, are recommended:

Potato Bread—Straight Dough Method.

For four 1-pound loaves, the following ingredients are required:

3 pounds of boiled and peeled potatoes.
2¼ pounds of good bread flour.
3 level tablespoonfuls of sugar.
1½ level tablespoonfuls of salt.
2 cakes of compressed yeast.
4 tablespoonfuls of lukewarm water.

Wash thoroughly and boil in their skins about 12 potatoes of medium size. Cook them until they are very tender. Drain, peel, and mash them while hot, being careful to leave no lumps. Allow the mashed potato to cool to 86° F., or until lukewarm. To 3 pounds (5 solidly packed ½-pint cupfuls) of the mashed potato, add the yeast, which has been rubbed smooth in a cup with 3 tablespoonfuls of lukewarm water. To get all the yeast, rinse the cup with the remaining tablespoonful of water and add this also to the potato. Next add the salt, the sugar, and about 4 ounces of the flour (1 scant half-pint of sifted flour). Mix thoroughly with the hand, but do not add any more water at this stage.

Cover the mixing bowl to avoid the formation of a crust on top and place out of the way of drafts to rise, where the temperature can not fall below 80° F. or be much higher than 88° F. Where the housewife has no thermometer, she should see that the dough in all the risings is kept moderately warm, but not up to blood heat. Any water used in mixing the dough should be moderately warm, but by no means hot. This sponge, if kept at the proper temperature, should, after two hours, become quite light.

To this well-risen sponge, which now will be found to be quite soft, add the remainder of the flour, kneading thoroughly until a smooth and elastic dough has been formed. The dough must be very stiff, since the boiled potato contains a large amount of water, which causes the dough to soften as it rises. Do not add water to the dough unless it is absolutely necessary to work in the flour. Set the dough back to rise again (temperature at about 86° F.) until it has trebled in volume, which will require another hour or two. Then divide the dough into four approximately equal parts, reserving a tiny lump weighing 2 or 3 ounces for an "indicator." Shape the sample into a ball and press it into the bottom of a small tumbler with straight sides. The glass should be slightly warmed. Note the volume of the ball of dough in the tumbler and mark the glass at twice this volume.

Mold the four portions into loaves and place in greased pans which have been slightly warmed. Place the glass containing the "indicator" beside the pans and let all rise, under proper temperature, until the "indicator" shows that it has doubled in volume, then place the loaves in the oven and bake in a good, steady heat (400° to 425° F.) for 45 minutes.

To test oven.—Where no oven thermometer is at hand, a convenient test will be to put a teaspoonful of flour in an earthen dish in the oven. If this flour becomes light brown evenly throughout in 5 minutes' time, the oven is right for bread baking. If the flour scorches in that time, the oven is too hot.

Potato Bread—Sponge Method.

For four 1-pound loaves are required:

3 pounds of boiled and peeled potatoes.
2¼ pounds of good bread flour.
3 level tablespoonfuls of sugar.
1½ level tablespoonfuls of salt.
1 cake of compressed yeast.
4 tablespoonfuls of water.

Boil, peel, and mash the potatoes as directed in the straight dough method. In the evening take 1½ pounds, or 2½ solidly packed half-pint cupfuls, of the cool mashed potato, add to it the salt, 4 ounces of flour (1 scant half-pint cupful), and the yeast rubbed smooth with the water, reserving one spoonful to rinse the cup.

In the morning add the remainder of the potato, the sugar, and the rest of the flour. Knead thoroughly until a smooth and very stiff dough is formed. After working the dough, set it to rise according to the directions given for the second rising under the straight dough method. Thereafter handle the dough exactly in the same way as is given under the straight dough method.

Potato Bread Rolls.

Very good rolls can be made from a similar mixture of boiled potatoes and flour by adding shortening and sugar. The following proportions will yield one dozen small rolls:

8 ounces of boiled and peeled potatoes.
6 ounces of sifted flour.[1]
½ cake of compressed yeast.
¾ level teaspoonful of salt.
2 tablespoonfuls of lukewarm water.
2 tablespoonfuls of sugar.
2 tablespoonfuls of butter.

Boil, peel, and mash the potatoes as directed for bread making. Add, in order, to this the salt, the powdered milk (if used), the yeast rubbed smooth and mixed with the water, and lastly two tablespoonfuls of flour. Let this mixture stand at a temperature of about 86° F. until the dough begins to collapse. Add to this sponge the butter, the sugar, and the remainder of the flour, and, if necessary, enough more flour to make a very stiff dough. Knead thoroughly until

[1] Two tablespoonfuls of powdered milk, added to the dough, will greatly improve the quality of the rolls. Although milk itself or cream may be used, it must be borne in mind that they will increase the liquid content.

a smooth dough, which is no longer sticky, has been formed. Set back to rise again, and when the dough has trebled in volume, knead lightly, form into small balls, and place, not too close together, in greased pans. Allow to rise until double in volume, as shown by the "indicator," and bake 20 minutes in a moderately hot oven, at about 400° F.

RUSTS OF GRAIN CROPS.

(*Continued from page 1.*)

necessary, however, that the light-weight, shrunken kernels be removed and only the heaviest seed obtainable used from such a field. Much of the wheat from this year's crop is of poor quality, and should be thoroughly fanned and screened. *Special effort should be made this year to provide for good seed wheat for next year. Germination tests, of course, should be made.*

Cooperative Work.

A number of State experiment stations are vitally interested in the rust work and are cooperating with the cereal pathologist of the department. The stripe rust in the Western States, its distribution and occurrence, together with its life history and varietal relations, are at present under investigation.

There is also considerable cooperative work being done on the variety testing and breeding of cereals for rust resistance. The major portion of this work is devoted to wheat, but oats is also receiving some attention. In this work rust nurseries are maintained at four experiment stations, where each year an artificial epidemic is secured, thus allowing for continuous rust records on any given variety and also insuring the most severe rust conditions possible. Work on spring wheat is in progress at the Minnesota station; at the Iowa station on spring oats; at the Kansas station on hard winter wheats; and at the Tennessee station on soft winter wheats and winter oats. The field trials on rust resistance are supplemented by greenhouse tests where both seedling and mature plants are artificially inoculated with rust and degree of infection noted.

Variety Testing and Breeding.

The results on the variety testing for resistance up to the present time have demonstrated several general facts. None of the common or so-called bread spring wheats is to any useful degree immune to the stem rust attack. The most commonly grown of these susceptible varieties of spring wheats are the Fifes, Bluestems, and bearded wheats, including such varieties as Marquis, Power Fife, Haynes Bluestem, Prelude, and Preston. On the other hand, it has been abundantly demonstrated that certain varieties of durum and emmer are extremely resistant to the rust in contrast to the common spring wheats. This fact has been very clearly demonstrated in the rust epidemic of the past season, where the common wheats, as well as many varieties of durum wheats, were very heavily rusted, while other adjacent rows of durum wheat were practically clean of rust. In the field many farmers suffered severe loss in their durum crop on account of the rust, while others obtained yields of two to three times as many bushels of better grade wheat than was obtained from the common bread wheats in the same vicinity. This demonstrates very strongly the necessity for planting, where durum wheat is successfully grown, only the resistant types.

Only one or two varieties (White Tartarian and White Russian) of oats have been found to be at all resistant to the stem rust, a fact which necessitates a vigorous search for new varieties. A considerable number of oat varieties, however, are fairly resistant to the crown rust. Among these are Cook, Burt, Red, Appler, and Fulghum, all of which belong to the red-oat group and are not suitable for culture in the Northern States.

It is clear that it will be necessary to resort to hybridization in order to combine the desirable characters of rust resistance, yield, milling or feeding value, earliness, etc., in our cereal crops. An extensive series of crosses has already been made and some progeny lines of spring wheats in the tests of the last several years have proved very promising. More extensive tests under field conditions will be necessary, however, before they can be safely increased and widely distributed. Some breeding work is also in progress with oats and winter wheat.

Fertilizers and Rusts.

The results, obtained particularly at the Minnesota station, in determining the effect of artificial fertilizers on rusts indicate that soil fertilizers do not play an important part either for or against resistance in a real field epidemic and that as a factor in farm practice, the relations between the application of commercial fertilizers and the rust can largely be disregarded. It seems highly improbable that any control of rust through the application of any reasonable amount of commercial fertilizers can ever be hoped for.

Control Measures.

It is well known that seed treatment has no effect on the rust. Soil treatment is also almost ineffective, except in so far as good soil practice will put the seed bed in the best condition and promote the most rapid and vigorous growth of the wheat plant.

Of course, spraying of grain fields is not only impracticable but useless as well. Certain farm practices, as for instance the use of well-drained land, however, should be followed in order that the crop may be given the best possible chance to escape an epidemic or to endure it.

Early-maturing varieties on well-prepared land, sown as early in the season as possible, may assist in escaping the rust if the attack is late.

Varieties suitable to the particular locality and to the climatic and soil conditions, should, of course, be selected. Good seed should be obtained from reliable sources; and if suitable varieties are not known to the planter, they should be grown several years somewhat experimentally for observations on yield and rust resistance.

Resistance to the stem rust of oats is not to be found in any of the red oat varieties known at the present time, but some of these varieties are resistant to the leaf or crown rust. Sixty-Day and Kherson oats will in some years and in some localities mature early enough to escape severe injury from rust even though not actually resistant.

There can be no logical reason for maintaining common barberry plants anywhere in the vicinity of grain fields. Certainly no new ones should be planted and the old ones should be removed.

Clean cultivation of fields in order to keep down such grasses as wild barley, quack grass, and slender wheat grass is advisable.

H. B. Humphrey,
Cereal Pathologist.

CANNING APPLE CIDER.

Apple cider may be canned and be kept sweet indefinitely, according to the canning specialists of the Office of Extension Work, North and West, who furnish the following recipe:

Fill fruit jars with the fresh apple cider. Add a tablespoonful of sugar to each quart. Place rubber and cap in position and partially tighten (cap and tip in case of tin cans). Sterilize in the hot-water bath outfit for 10 minutes; in the water-seal outfit for 8 minutes; in the steam-pressure outfit, under 5 pounds of steam, for 4 minutes; in the aluminum pressure cooker for 2 minutes. Remove jars, tighten covers, invert to cool, and test joints.

The Seed Laboratory of the United States Department of Agriculture, and also the seed laboratories of many of the experiment stations of the State colleges of agriculture, will make without charge tests of alfalfa seed and other seeds both for purity and germination. The test for purity determines the percentage of pure seed and weed seeds, including dodder. Samples sent to the department should be addressed to the Seed Laboratory, United States Department of Agriculture, Washington, D. C. The name and address of the seller, the year and place of growth, the price paid, and the name and address of the sender of the seed should accompany the sample in so far as this information can be given.

CANNING CULL APPLES.

New Recipes for Utilizing Windfall and Unmarketable Apples—Canned Whole, Sliced, or Quartered.

New receipes for utilizing windfall and cull apples for home use are being furnished to canning clubs by the Office of Extension Work, North and West, States Relations Service. There are many ways in which such apples may be made into valuable and palatable food products, such as apple sauce, cider, apple sirup, cider vinegar, jelly, preserves, apple butter, etc. The new recipes, which follow, are for canning apples whole, sliced for pie filling, and quartered for fruit salads. Only reasonably sound fruit should be used. Injured or decayed parts and overripe fruit should not be canned.

Canning Whole Apples.

Wash apples. Remove core and blemishes (pare if desirable). Place whole apples in blanching tray or cheesecloth and blanch in boiling water for two minutes. Remove and plunge quickly into cold water. Pack in large, empty glass jars or gallon tin cans. Pour over the product a hot thin sirup of about 18 per cent density, or about 1 pound of sugar to 4½ pints of water. Place rubber and top in position. Seal partially, not tight. (If using tin cans, cap and tip completely.) Process half-gallon or gallon containers 20 minutes in boiling hot water, in homemade or hot-water bath coutfit; 15 minutes in water-seal; 10 minutes in steam-pressure outfit, with 5 pounds of steam pressure; 5 minutes in aluminum pressure-cooker outfit, under 15 pounds of steam pressure. Remove jars, tighten covers, invert to cool, and test joints. Wrap in paper and store. The time of heating will have to be varied according to ripeness and condition of the fruit. Use just enough time to sterilize perfectly, and yet not enough to change the color or reduce the pulp to sauce.

Firm and tart apples may be cored and peeled first, then canned by the above recipe.

To keep apples from tarnishing while coring and paring drop apples into slightly salted cold water and allow to remain in this water until ready to pack.

Among the ways in which canned whole apples may be used are the following:

(1) Breakfast dish, with cream and sugar added.

(2) Baked, like fresh apples, for breakfast or for other meals.

(3) Apple salad, often served for lunch or supper.

(4) A relish with roast pork. The apples may be fried in the pork fat or the cores may be cooked with roast pork for flavoring.

(5) Apple dumplings, deep apple pie, and other desserts in which whole apples are desirable.

(6) The sirup of canned whole apples can be used for pudding sauces or fruit drinks.

Canning Apples for Pie Filling.

Wash, core, and pare the apples, and remove all decayed or injured spots. Slice apples quickly into a basin containing slightly salted cold water (about 1 teaspoonful per gallon) to keep from discoloring. Pack fresh cold product in glass jars or tin cans. Add one cupful of hot, thin sirup of about 18° density to each quart of fruit. If using glass cans, put on the rubbers, and screw on the tops, but do not seal completely. If using tin cans, cap and tip, sealing up completely. Sterilize 12 minutes in hot-water bath, homemade outfit; 10 minutes in water-seal outfit; 6 minutes under 5 pounds of steam pressure; 4 minutes in aluminum pressure cooker. Remove jars, tighten covers, invert to cool, and test joints. Wrap in paper and store.

This filling can be used for making apple pies in the same way that fresh apples would be used, with the exception that the sirup must be poured off, and less sugar should be used. Since the apples have already been cooked, only enough heat is needed to cook the crust and warm the apples through. Pies may be baked in 7 minutes. The apple pies made with these apples are, in the opinion of many housekeepers, as good as those made with fresh fruit, and they can be made in less time and are less expensive.

Canning Quartered Apples for Fruit Salads.

Select best grade of culls of firm and rather tart varieties. Core, pare, and quarter. Drop into basin containing slightly salted cold water. Pack these quartered pieces tightly in jar or tin container. Add a teacupful of thin hot sirup to each quart. Place rubber and top in position, partially seal, not tight. Cap and tip completely tin cans. Sterilize 12 minutes in hot-water bath, homemade outfit; 10 minutes in water-seal outfit; 6 minutes under 5 pounds of steam pressure; 4 minutes in aluminum pressure cooker. Remove jars, tighten covers, invert to cool, and test joints. Wrap in paper and store.

APPLE SIRUP.

Another Way of Making Use of Windfall and Cull Fruit.

It may not be practical for the average fruit farmer to make apple sirup as a commercial proposition, but during seasons when there are a large number of culls and windfalls, or when markets are glutted, it is a matter of business economy to utilize by-products, and the making of apple sirup for the family's use is quite worth while. The following method for making apple sirup is furnished by H. C. Gore of the Bureau of Chemistry of the department:

Wash apples, remove all decayed and worm-eaten spots, and press out juice as usual for cider making. Be sure the juice does not ferment or "work," as only sweet cider should be used for sirup making. The sterilizing, reducing vat, or kettle, should be a third larger than required to hold contents.

Add 5 ounces of powdered calcium carbonate to 7 gallons of apple cider. Powdered calcium carbonate (carbonate of lime), or, to give it its common name, precipitated chalk, is a low-priced, harmless chemical available at any drug store. Boil in kettle or vat vigorously for a period of five minutes. Pour the liquid into vessels, preferably glass jars or pitchers, allow to stand 6 or 8 hours, or until perfectly clear. Pour the clear liquid into preserving kettle. Do not allow sediment at bottom to enter. Add to the clear liquid one level teaspoonful of lime carbonate and stir thoroughly. The process is completed by boiling down rapidly to a clear liquid. Use density gauge or candy thermometer and bring it up to 220° F., or, without thermometer, reduce bulk to one-seventh of original volume. To see whether it is cooked enough, test as you would sirup or candy, by pouring a little of it into cold water. If boiled enough, it should have the consistency of maple sirup. It should not be cooked long enough to harden like candy when tested. When the test shows that the sirup has been cooked enough, pour it into fruit jars, pitchers, etc., and allow it to cool slowly. Slow cooling is important, as otherwise the suspended matter will not settle properly and the sirup will be cloudy. A good way to insure slow cooling is to stand the vessels full of sirup in a bucket or a wash boiler of hot water. They may also be placed in a fireless cooker. The white sediment which settles out during cooling is called "malate of lime" and is a harmless compound of lime with the natural acid of the apple. When the sirup is cooled, it should be stored in fruit jars or bottles. Place the rubber cap or cork in position and tighten. Then place the bottles or cans of sirup in hot water and sterilize for 12 minutes in hot-water or wash-boiler outfit, 10 minutes in water-seal outfit, 8 minutes in steam-pressure outfit under 5 pounds of steam, or 5 minutes in aluminum pressure cooker under 15 pounds of pressure.

Apple sirup made by this method is a very palatable and high-grade product. It has a flavor much like the thick sirup or jelly which is so often formed when apples are baked with a little sugar. As shown by experiments made by the Government experts, this apple sirup can be used in cooking with good results, as well as for table purposes.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., NOVEMBER 8, 1916. No. 14

EFFECT OF GOOD ROADS.

Selling Price of Tillable Farm Land Increases More than Total Cost of Improvements.

To determine as far as possible the exact dollars and cents effect on a county of the improvement of bad roads, specialists of the Office of Public Roads and Rural Engineering of the department made economic surveys in eight counties in each of the years from 1910 to 1915, inclusive.

This study of the increase in the values of farm lands in the eight counties reveals the rather interesting fact that following the improvement of the main market roads the increase in the selling price of tillable farm lands served by the roads has amounted to from one to three times the total cost of the improvements. The increase in values in those instances which were recorded ranged from 63 per cent to 80 per cent in Spotsylvania County, Va.; from 68 to 194 in Dinwiddie County, Va.; 70 to 80 in Lee County, Va.; 25 to 100 in Wise County, Va.; 9 to 114 in Franklin County, N. Y.; 50 to 100 in Dallas County, Ala.; 25 to 50 in Lauderdale County, Miss.; and from 50 to 100 in Manatee County, Fla. The estimates of increase were based for the most part upon the territory within a distance of 1 mile on each side of the roads improved.

In Spotsylvania County a careful record was made in 1910 of 35 farms located on the road selected for improvement. Of the 7 farms sold in 1912 the prices actually paid show increases of from 37 to 116 per cent over the 1910 valuation. The average value after the roads were improved was $28.26 per acre, as compared with $17.31 previous to the improvement. In 1913 four transfers of farm land were on the basis of $30.11 per acre, whereas the properties were listed in 1910 at only $13.89 per acre. It appears that the 1,451 acres sold in 1914 increased in value $28,500, or 80 per cent, or from $24.46 to $44.10 per acre.

In Dinwiddie County, Va., the actual price of 43 farms sold or offered for sale from 1909 to 1914 ranged in price from $8.38 to $43.74 per acre before the roads were built, and from $24.70 to $73.60 per acre after the roads were improved.

In Lee County, Va., a study of eight tracts along the roads before and after improvement indicated that these properties increased about $23 per acre, or about 70 per cent.

In Wise County, Va., a study of eight representative farms located on roads showed that they increased in value from an average of $49.06 per acre before improvement to $79.44 after the roads were improved. There were increases in valuation in other sections of from $60 to $90 or even $100 per acre.

In Franklin County, N. Y., the figures seem to indicate that the change from earth, sandy, and loam roads to bituminous macadam was followed by increases averaging $12.50 per acre, or about 30.7 per cent.

In Dallas County, Ala., careful investigation seemed to indicate that road improvement has added at least $5 to each acre of land within a half mile of improved roads. Tracts sold at from $8 to $10 per acre were sold again after road improvement at from $20 to $25 per acre.

In Lauderdale County, Miss., the total assessed valuation of real property outside of the city was $2,757,546. This increased in 1914 after road improvement to $3,183,809, or 15.4 per cent. Local real-estate men place the increase in land values on account of improved roads at from 25 to 50 per cent.

In Manatee County, Fla., careful study of sales and real-estate records indicated that the improvement of roads has added from 15 to 100 per cent, or at least $15 per acre, to the selling price of all lands within one-half mile of improved roads. This would give a total of $611,000, or more than twice the value of the bonds issued.

The formation of ice on the surface of fields is fatal to alfalfa. This condition is most apt to occur on fields that are level or that contain pockets.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

HOME ECONOMICS WORK.

Outline of Activities of Extension Workers Under Smith-Lever Act in Aid of Farm Family.

At a recent conference of workers of the States Relations Service of the department held in Washington, representatives of the Office of Extension Work, South, and of the Office of Extension Work, North and West, outlined what is being done by the women field agents of the department under the Smith-Lever Act to lighten the labors of farm women and girls and to help them to make their lives fuller and more satisfying. In introducing the speakers the Director of the States Relations Service pointed out that the division into work for men, women, and children is only for administrative convenience, and that to as great an extent as possible each branch of the work is carried on for the benefit of the entire farm family.

Work for Women in the South.

Approximately 60,000 girls and 30,000 women are now being reached by the home economics work in the Southern States through 462 agents. The work began with the girls, and through them the mothers were reached and interested. A well-defined four-year course of instruction has been developed for the girls. This constitutes distinct vocational training in the housekeeping arts, and also affords opportunities for earning money. The work usually begins with the cultivation of a garden and the canning of the products raised. Poultry raising, bread making and general cooking, sewing, and the care of the home are taken up later.

Activities Among Women.

The work with the women in the South has developed from the work with the girls, and the activities of both also naturally have broadened to include community interests as well as those of the home. Since the women of the country are producers, they have taken most interest in the assistance which the women agents may give them in taking up or developing income-producing work. Gardening, canning dairying, and poultry raising, therefore, have been among the most popular lines of work in many communities. In some of this work there has been a considerable

development of cooperation. This is especially true in the formation of egg circles for the marketing of eggs and in concerted work for the production of infertile eggs.

In connection with the work of preparing food, the southern demonstration agents are helping women make labor-saving devices and home conveniences, such as fireless cookers and iceless refrigerators. The whole field of sanitation often has been opened up by arousing interest in the making of flytraps. With general home interests thus awakened, the work has been extended to considerations of clothing, house management and furnishing, and community and social interests.

Women's Clubs as a Factor in the Work.

The formation of women's clubs has not been pushed, the speaker said, because it has been found that unless clubs grow naturally from a spontaneous interest of the members they are unlikely to endure. When such clubs are the outgrowth of work, or the awakening of community spirit, however, everything possible is done to encourage them. Eventually, the extension workers believe, the men and women may be associated in clubs to excellent advantage. A few such clubs now exist and are doing good work for the communities, but their number is limited. Wherever possible the men and women county agents are cooperating in their work and finding mutual advice and suggestion most helpful.

All phases of the extension work, it was stated, have demonstrated their value and are taking firm hold on the interests of the southern people. Most of the counties are increasing their appropriations to aid in the work and many are defraying expenses for the agents.

Work in the North and West.

While the extension work among women in the North and West has been in existence for a much shorter time than in the South, it is making satisfactory headway. The first Federal woman agent for this work was appointed in April, 1916, and most of the 14 agents now in the field have been employed only since July 1. The home economics work, it was pointed out, has been built on the foundation laid in many of the Northern and Western States by home economics specialists of the extension departments of the State agricultural colleges. The county women agents are cooperative agents of the agricultural colleges and of the United States Department of Agriculture.

Needs for the Work.

The need for domestic science work among farm women is obvious. The ability of the farmer's wife efficiently to aid in the farm activities by properly managing the household, or her lack of ability, often tips the balance of the farm enterprise to success or failure, the speaker said. Assisting the wife to make the most of her possibilities, extension agents believe, will help to make the farm partnership closer and more consistent.

Factors in the Work.

Factors of importance in the home economics work in the North and West are, in addition to the ordinary work of the specialists of the State colleges, such special features as automobile home makers' excursions in which large numbers of farmers and their wives go through the neighboring county, stopping at various points for demonstrations and to examine farm and home equipment, methods, and results. Clubs also are proving helpful. There are at this time approximately 1,350 active home-economics clubs in the Northern and Western States, with an approximate total membership of 27,000. The agricultural colleges are active in furnishing suggestive monthly progress for those clubs. The visits of State specialists to these clubs are necessarily few, however, and instruction by such means can not reach a large number of women. Realization of this has brought about in many counties a demand for county women agents who may devote more time to the work. Where such agents have been provided, their work has been taken up with enthusiasm by the farm women. The women agents are working through clubs, the granges, and schools, calling for assistance when necessary on the State agricultural colleges and the specialists of the Federal Department of Agriculture. The men and women county agents are coordinate, but cooperate and advise with each other freely.

Problems in the Work.

One of the big problems in the work is the finding of the right women to serve as agents. More emphasis should be placed, the speaker said, on the methods of instruction to be employed and on the study of the psychology and sociology of the farm woman, in order that the work may be made as helpful as possible. In this connection, there should be a stripping away of all technicalities and unnecessary complications in the instruction given. Another great need in the work is for local leadership by country women who will keep the work alive by activities from the inside.

If ginning practices which permit the mixing of seed from different loads of cotton are allowed to continue, and if the common custom of planting different varieties indiscriminately in the same locality is not restricted, it is only a question of time until all varieties, no matter how well selected, will descend to the mongrel type. Farmers of each community should determine by experiments the particular variety of cotton which is best suited to their section and should agree to plant this variety only.

SHELLED CORN SALES.

New Standards Not to Apply to Contracts Made Before September 1 for Delivery After December 1, 1916.

Sales of shelled corn made before September 1, 1916, for delivery after December 1, 1916, will not be subject to the recently enacted United States grain-standards act, under which official standards for corn have been established by the Secretary of Agriculture, effective December 1, 1916. This statement is made in Service and Regulatory Announcements No. 13, Office of Markets and Rural Organization of the department, recently issued. It is stated, however, that the opinion expressed is advisory only, and it is pointed out that while it expresses the views of the department on the question involved it is, of course, not binding on the courts.

In construing the act as permitting the shipment of grain under contracts made before September 1 for delivery after December 1, without reference to the official grades to become effective on the latter date, the department declares, in its opinion:

"It is plainly impossible for the parties to an agreement to sell or consign, entered into before there are any official grain standards of the United States, and before there is any opportunity to know what they will be, to specify the grade of the grain involved in accordance with such standards. It would plainly impute to Congress an absurd intention and would give a harmful retroactive effect to the statute, to hold that it prohibits the shipment of grain in interstate or foreign commerce pursuant to an agreement not made according to standards which had not yet been promulgated or become effective, even though such standards are established before the shipment. The language of the act does not necessarily or reasonably require that such construction be given."

The opinion directs attention to the fact that certain grain exchanges have adopted the new corn standards as a basis for contracts entered into on and after September 1, and that practical difficulties anticipated in the settlement of contracts made before September 1 on the basis of the old grades will be largely overcome by private adjustments. In connection with its opinions the department explains that it is its earnest aim to work in close harmony with and in the interest of all branches of the agricultural industry and that it is not its desire unduly or unnecessarily to disturb trade conditions.

In Service and Regulatory Announcements No. 13 it is also stated that the standards for shelled corn adopted by the department have no effect on the legal weight per

bushel of that grain. The department points out that weights per bushel are mentioned in the grades only as minimum test weights for grades Nos. 1 and 2, since it is necessary to consider weight in some seasons and under some conditions to insure against the inclusion in these two grades of an undue proportion of light, immature, or chaffy kernels which would not be excluded by the other requirements of the grades. Since the exclusion of such kernels from the lower grades is considered to be of much less importance and to be satisfactorily covered otherwise, test weights for such grades are not included.

It is also pointed out in the announcement of the department that the requirements for inspectors under the act apply only to grains for which standards have been established thereunder and which are shipped or delivered for shipment in interstate or foreign commerce. No standards have been established under the act for any grain except those for shelled corn. The publication describes the requirements for licensing inspectors for shelled corn.

It also contains a list of the apparatus needed by a laboratory for determining the grade of shelled corn according to the official grain standards of the United States.

Those wishing to obtain licenses to inspect and grade shelled corn are urged to apply at once to the Office of Markets and Rural Organization, U. S. Department of Agriculture, Washington, D. C., for copies of the forms and other information relative to the licensing of inspectors of shelled corn.

BRIEF ITEMS.

A ton of soy beans will yield about 40 gallons of oil useful in various ways.

A hundred and twenty-four pairs of birds nest on the average farm in the Northeast.

Garlic flavor can be eliminated by heating milk to 145° F. and blowing air through it.

There are 70 national bird reservations, of which 67 are in charge of the Department of Agriculture.

Care should be taken to handle alfalfa hay so as not to lose leaves, as these contain considerably more than 50 per cent of the feeding value of the hay.

After testing his 17 cows through a cow-testing association, a Nebraska farmer sold 7 and received more profit from the 10 remaining animals than he had received formerly from the whole herd.

The United States meat-inspection service certified to the wholesomeness of 11,220,958,000 pounds of meat from 61,826,304 animals during the last fiscal year. It condemned 348,945 animals and 738,361 parts of animals, equivalent to about 84,320,000 pounds of meat.

BULL ASSOCIATIONS.

Cooperative Organization Enables Dairyman to Have Use of Pure-bred Animal at Low Cost.

A cooperative bull association is a farmers' organization, the chief purpose of which is the joint ownership and use of high-class, pure-bred bulls. The association also may encourage careful selection of cows, obtain better prices for dairy products, introduce better methods of buying and selling cattle, work for improved sanitary conditions, intelligently fight contagious diseases of cattle, and in many other ways assist the dairy business.

The owners of small herds of grade cows often feel that they can not afford to purchase valuable pure-bred bulls. In consequence they buy scrubs, or breed their cows to a scrub bull or an inferior pure-bred bull on some near-by farm. One year a Holstein bull may be used, the next year a Jersey, and occasionally a bull of no particular breeding. The work of the cooperative bull associations makes it possible for any farmer to own a share in a pure-bred bull of high quality.

A bull association in its simplest form may consist of three farmers who together purchase three good registered bulls of the same breed. Each farmer keeps one of these bulls for two years, at the end of which time the bulls are exchanged to prevent inbreeding. For the same reason a second exchange is made at the end of four years. In this way, by paying the purchase price of only one bull, each member of the association has the use of good pure-bred bulls for six years. A larger membership in the association may either reduce expenses or make possible the purchase of better bulls.

The ideal association is composed of a much larger number of farmers. It jointly owns five bulls, divides its territory into five "breeding blocks," and assigns one bull to each block. As many as 50 or 60 cows may belong to the farmers in each block, and the bull is kept on some farm centrally located. The blocks are numbered from 1 to 5, and every two years the bulls are moved forward to the next block. If all the bulls live and are retained until each has made one complete circuit, no new bulls have to be purchased during a period of 10 years. As soon as the daughters freshen, evidence of the sire's true value begins to accumulate. This is the only true test of a bull's real value; but it is self-evident that this test can not be applied until the bull approaches the age of 4 years. In ordinary farm practice bulls are usually disposed of before their true value can be known The cooperative bull association makes it possible to obtain several years' service from bulls that transmit desired qualities and to eliminate all others.

The original cost of the five bulls and their annual cost of maintenance are usually divided among the members of the association according to the number of cows owned by each. Records on file in the Dairy Division of the department show that the members of associations now organized are getting the services of these high-class pure-bred bulls at an average cost considerably less than they formerly paid for the services of scrub bulls or registered bulls of doubtful merit. Many farmers in Maryland, Michigan, and Minnesota, when questioned regarding the value of cooperative bull associations, estimated that the use of sires belonging to the association increased the value of the offspring in the first generation from 30 to 80 per cent. The average of these estimates was 65 per cent.

The educational work of each association makes the members alert to prevent the introduction and spread of disease of any kind. The well-managed bull association requires that all cattle belonging to its members shall be tested for tuberculosis and takes every known precaution to prevent the introduction of contagious abortion.

It is greatly to the advantage of a cooperative association that it be incorporated under State laws. This facilitates the transaction of business, equitably distributes responsibility, and gives the organization greater prestige in the community.

Cooperative bull associations have been common in Denmark for many years, but the first associations of the kind in the United States were organized in 1908 by the Michigan Agricultural College. In this country their growth has not been rapid, but, as a rule, they have been highly successful. If skillfully managed, they may be made a great factor in the upbuilding of profitable dairying in this country.

APPLE LEAF-SEWER.

The apple leaf-sewer, sometimes termed the apple leaf-folder, is readily controlled by the use of a spray of 2 pounds arsenate of lead to 50 gallons of water. This spray should be used on young orchards before June 15. In older orchards spraying with arsenicals for the codling moth will also protect the trees from the leaf-sewer.

These insects, if not controlled, may seriously affect the foliage, as the larva after folding one leaf and exhausting its food supply, passes on to other leaves. One larva may damage several leaves in a season.

It is impossible to make sweet, clean, flavored butter from old, unclean cream.

FALL CARE OF FLOWERS.

Winter Protection for Perennial Plants—How to Prepare and Store Roots and Bulbs.

Steps to be taken at this season for placing the flower garden in shape for winter will vary with the kinds of plants grown and the latitude, say specialists of the department. In the case of perennials, which die down to the ground but which should live through the winter and send up shoots again on the advent of warm weather, the roots should be well mulched with manure 3 or 4 inches deep as soon as the ground freezes. In this group are included such plants as peonies, larkspur, hollyhock, columbines, iris, platycodones, and perennial poppies.

Cannas and Kindred Plants.

Plants such as cannas, dahlias, gladiolas, and Caladiums should have their roots dug up and stored in a cellar where the temperature will not rise above 60° nor fall below 50° F. The root clumps of cannas and dahlias should not be shaken free of soil. These plants with the soil naturally adhering to them should be placed on racks or in slat boxes so that air may circulate among them. It is important that the roots do not become too warm or dry and that no frost shall reach them. The bulbs of gladiolas, Caladiums, and tuberoses, on the other hand, should be carefully cleaned of soil and dried in the open air for a day or two. They may then be stored in the cellar.

Geraniums.

In all but semitropical portions of the United States geraniums must be taken indoors for winter. Florists usually make cuttings in the fall to grow new plants in greenhouses for spring use. This practice is, of course, impracticable for the average householder. The latter may take up growing plants and hold them in a dormant condition by storing upright in boxes of dry soil in a cellar having a temperature of from 40° to 50 ° F. The plants may be placed close together with only a little dry soil among the roots.

Pansies.

While taking many plants indoors for the winter, the home gardener in a large section of the country should set out in the fall the pansy plants which are to make up the spring beds of these flowers. This procedure should be followed in the country south of a line from New York City to Springfield, Ill. The young plants should be covered by coarse manure at the first freezing of the ground before it has an opportunity to thaw.

Preparing Shrubs for Winter.

While a number of the shrubs commonly grown in the garden will go through the winter without injury if let alone, others must be given varying degrees of special attention. Among the shrubs which need no unusual fall and winter care are snowball, spirea, mock orange, and lilacs.

Hydrangeas, even in the south, must have special winter protection and in the north must be lifted, set in tubs, and kept in a frost-proof cellar. An east and west line through Philadelphia is generally accepted as marking the boundary north of which it is necessary to take hydrangeas indoors. South of this line it is usually sufficient to protect the tops of the plants with straw or brush while they are in their outdoor locations. A little manure or straw may be placed on this covering to hold it in place. The brugmansia, or thorn apple, should be treated like the hydrangea.

PLANTING BULBS OUTDOORS.

The first frost which will put an end to the development of many of the flowers in the home garden should be the signal, say specialists of the department, for the planting of bulbs of the tulip, hyacinth, and narcissus, which are to furnish the first touch of color for the outdoor garden in the spring. The bulbs may be put in even before the appearance of the first frost, but better not until after.

Tulips and hyacinths should be placed in beds in light, rich soil that has been dug to a depth of at least 10 inches. They should be set 4 inches deep and 5 inches apart. If the narcissus and its variants—jonquils and daffodils—are to be planted in beds, the soil should be prepared similarly and the bulbs should be set 10 inches apart and 5 inches deep.

A pleasing variation from planting the narcissus type of early spring-blooming bulbs formally in beds is to plant them in scattered groups on the open lawn or in the edge of shrubbery. A good plan in arranging for the location of the flowers on the lawn is to broadcast the bulbs and plant them where they fall. A small hole 5 or 6 inches deep should be made and the bulb inserted, pointed end up. The hole should then be pressed full of soil. Often the narcissus, planted in this way, will become naturalized on the lawn and will continue to grow there indefinitely, coming up year after year, if the tops are left uncut until near the 1st of June. Where the lawn is kept cut the tops of the plants are cut off before the bulb has a chance to develop for the next year's blooming, though they may survive a year or two, but become weak and poor after the first or second year. Crocus bulbs may be planted in the lawn in the same way, but the top should not be deeper than twice the length of the bulb.

PLANTING BULBS INDOORS.

At the same time that bulbs are being planted out of doors, bulbs of the same and other sorts may be prepared for growth in the house. The housewife who is to grow flowers in this latter manner has several possibilities open to her. She may grow many of the bulbs in soil in window boxes or pots, in moistened fiber or moss, or among pebbles, and may grow hyacinths in water alone.

If soil is selected for the growing medium, the boxes or pots should be provided with a layer of coarse drainage material such as pebbles and broken pots, and then filled with light soil. Three to five bulbs may be placed small end up in a medium-sized pot, and should be covered with 1 inch of soil. After planting, the box or pot in which hyacinths or narcissi are planted should be placed out of doors and covered with about 4 inches of ashes or sand. The bulbs so planted should be left out of doors for from three to six weeks until a quantity of roots have formed. If it is considered more desirable, the pots or boxes may be placed in a dark, cool room or in a cellar, without covering, and left until the bulbs have formed a mat of long roots. If they throw up sprouts from 2 to 3 inches high before the roots are formed they have been kept too warm. The soil must be kept well moistened, but not overmoist. After the root-forming period is past, the pots or boxes may be taken to a light, moderately warm room for flowering. If the room is too warm the stems will be long and weak. If cool they will be short and strong and make more attractive plants.

If the bulbs are to be grown in bowls of pebbles or moss, or in water, they should also be set in a cellar for root formation to take place before being taken to the room in which they are to bloom.

Alliums, scillas, and the like need to be kept in a light, warm place from the time of planting. Tulips are hard to grow in the house and should not be attempted except by experienced plant growers after receiving special instructions.

Bales of cotton compressed at the gin arrive at their destinations in better condition than do other compressed bales.

Contagious abortion is rapidly becoming one of the most costly of animal diseases. It is estimated that it costs the dairy industry $20,000,000 a year in dead calves and dry cows.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1919

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., NOVEMBER 15, 1916. No. 14

WATER IN GRAIN.

Only Weight of Dry Matter Should Be Considered—Moisture Actually Should Be Reduced.

The weight of the water which is contained in varying proportions in all grain, flour, and cottonseed should be subtracted and only the dry material considered in making sales and purchases, say grain standardization specialists of the department. Such a method is fair, they declare, for producer, dealer, and consumer alike. The percentages of moisture in different lots of grains and seeds and their products are always appreciable and sometimes very high. The purchaser who merely buys such products by weight or volume, therefore, without consideration of moisture content, is often paying a grain price for considerable quantities of ordinary water.

The advantages in trading on a dry-matter basis are not confined to the dealer, but are shared by the producer. Because grains as they come from the farm often contain such large percentages of moisture that they are in danger of fermenting or molding, dealers take a risk in handling them. For this reason the prices paid to farmers are usually placed low enough to compensate for probable loss or for the cost of artificial drying. The average price struck is usually lower than the farmer with low-moisture-content grain would receive on a dry-matter basis, and therefore penalizes good farming methods. The general adoption of the dry-matter basis, the department specialists say, would, on the other hand, place a premium on better farm practices, resulting in the production of drier grains.

Not only does the farmer producing relatively dry grain lose now when the moisture content is not considered, but the producer of high-moisture grain often suffers an even greater loss by having his product spoil on the farm, in transit, or in commercial storage. If he ships for sale to a distant market, he also suffers loss by having to pay freight on valueless water. If such a farmer ships five cars of grain of 20 per cent moisture content, he is in reality shipping four cars of dry matter and one car of water. If he had by proper treatment brought his product down to a 12 per cent moisture content, he would be saving freight on two-fifths of a car of water.

Both dealers and farmers may help to improve conditions in the grain industry, department specialists point out. Dealers may adopt the dry-matter basis in buying. Farmers who already are growing grain low in moisture content can insist on being paid a fair price for the portion of their product which is really valuable, instead of having their superior grain averaged with the moist grains of less careful farmers. Growers who are producing grains high in moisture content may plant earlier-maturing varieties and may take greater care in storing their crops so as to protect them from the weather and facilitate natural drying. Farmers shipping their grains to distant markets for sale, and, therefore, paying freight, may find it advantageous in some instances to have the moisture artificially removed by local elevator concerns.

To make easier the calculation of values when the moisture contents are to be eliminated, grain-standardization specialists of the department recently have prepared a series of 12 tables showing comparative values on a dry-matter basis for grains and similar products containing various percentages of moisture; percentages of shrinkage and the corresponding reduction in the moisture content, and other data. These tables are included in a new Professional Paper, Bulletin 374, just issued. Those interested in technical grain standardization may secure copies of this bulletin by applying to the department.

HIGH RECORDS BY CLUB MEMBERS.

High records were made by the State champions in boys' and girls' club work in the Northern and Western States in 1915, according to compilations made by the States Relations Service of the department, which, in cooperation with the State agricultural colleges, directs the club activities.

In the potato-club work 11 State champions made an average yield of 483.10 bushels per acre, at an average cost of $82.35 and an average profit of $242.84.

Four champions in kafir and kaoliang clubs made an average of 75 bushels per acre, at a cost of $18.96 and a profit of $34.19.

In the home garden and canning club work 10 State champions grew an average of 2,031 pounds of vegetables per one-tenth acre, at an average cost of $40.64 and an average profit of $85.12.

In the home-canning work three State champions' canning average was 215 quarts of food products, with a total cost of $22.47 and a profit of $50.32. These products sold at high prices, due to their exceptional quality as home-canned products.

LOWER HAULING COSTS.

Improved Roads Effect Gross Saving of $627,409 in Eight Selected Counties.

Improvement of roads in eight selected counties in different sections of the United States resulted, in the aggregate, in a total gross annual saving in hauling costs of $627,409, according to recent economic studies made by the Office of Public Roads and Rural Engineering of the department. The cost of haulage for the group of counties is lower since the roads were improved, it was found, even when charges are made in the comparative computations for interest on bonds and annual maintenance costs. The results of the studies, which extended from 1909 to 1915, and which included other effects of improved highways than those on traffic, are shown in Department Bulletin 393, recently published.

The eight counties in which the studies were made are Spotsylvania, Dinwiddie, Lee, and Wise Counties, Va.; Franklin County, N. Y.; Dallas County, Ala.; Lauderdale County, Miss.; and Manatee County, Fla. These counties were selected because they had just issued bonds for road improvement when it was decided to make the studies, and it would therefore be possible to cover the road improvements from outset to completion.

The average gross annual saving in hauling costs due to the road improvements in these eight counties was found to be 17.9 cents per ton-mile, while the net saving was found to be 11.6 cents. The investigators point out in the bulletin that an actual cash saving to the amount indicated is not effected, but that this is the indicated saving when the time of workers and use of draft animals and equipment are given cash values at the rates prevailing in the several communities.

Effects by Counties.

In Spotsylvania County, Va., a bond issue of $173,000 was provided and 76 miles of road were improved. The average loads hauled in a two-horse wagon increased materially after the roads were improved, and ton-mile costs dropped from 30 cents to 13.7 cents. This meant a gross ton-mile saving of 16.3 cents, or a net ton-mile saving, when charges were made for interest on bonds and maintenance of roads, of 14.9 cents. The gross total annual saving in the county is, therefore, approximately $150,000;

and when deductions are made for interest and maintenance costs, the annual indicated net saving is $130,670.

In Dinwiddie County, Va., a bond issue of $105,000 was provided, and the State contributed, in addition, nearly $40,000 worth of convict labor. The improved road mileage at the completion of the study was 101 miles. Average loads for a two-horse wagon increased from about 2,000 pounds to about 3,200 pounds, and ton-mile costs decreased from 30 cents to 15 cents. The net ton-mile saving is 13.7 cents, and the indicated gross saving for the county is $124,970.

In Lee County, Va., a fund of $364,000 was provided by bonds, and the State contributed labor worth more than $21,000. Ninety-nine miles of road were improved. Average loads increased from 1,500 to 4,000 pounds, and ton-mile costs were reduced from 40 to 20 cents, with a net ton-mile saving of 10.6 cents. The gross annual saving for the county was $59,400.

In Franklin County, N. Y., bonds to the amount of $500,000 were issued, and 135 miles of road were improved. Average loads increased from about 2,400 pounds to 5,557 pounds. Ton-mile costs dropped from 30.3 to 9.6 cents, and the net ton-mile saving was 11.7 cents. The gross annual saving in the county for hauling charges has been approximately $50,000 since the roads were improved.

In Dallas County, Ala., $366,977 secured from the bond issue was used to improve 101 miles of road. Average loads increased from 1,500 pounds to 2,500 pounds, and ton-mile hauling costs fell from 30 to 15 cents. The net ton-mile saving was 10.9 cents. It is estimated that the county saves annually $90,000 gross in hauling costs as a result of the road improvement.

In Lauderdale County, Miss., $500,000 worth of bonds was issued, and 96 miles of road improved. Average loads increased from 1,500 to 2,500 pounds, and hauling costs dropped from 37 to 20 cents per ton-mile. This brought about a net saving of 3.9 cents per ton-mile when all annual charges against the road improvements were considered. The annual gross saving to the county is approximately $43,400.

In Manatee County, Fla., $252,500 obtained from a bond issue improved 63 miles of road. Average loads increased from 1,500 pounds to 4,800 pounds, which resulted in a reduction of ton-mile hauling costs from 45 to 20 cents. The net saving per ton-mile since the roads have been improved is 12½ cents. It is estimated that the county saves annually in gross hauling costs $32,573.

In Wise County, Va., $1,031,578.54 was provided for road work by bond issues, State contributions, and in other ways. From this fund 83 miles of road have been surfaced and 66 miles graded. Average loads have increased from 1,500 to 2,500 pounds and ton-mile hauling costs have been reduced from 57 to 23 cents. The gross saving to the county, when hauling costs alone are considered, is approximately $68,000 a year.

SWEATED CITRUS FRUIT.

The officials in charge of the enforcement of the Food and Drugs Act state they will be guided by the position of the department, previously announced, to the effect that the shipment in interstate commerce of immature oranges and grapefruit which are sweated either before shipment or en route is a violation of the act when the sweating conceals inferiority by making unripe fruit appear to be ripe. The sweating process turns the green color of the unripe fruit to yellow, and fruit so treated has the appearance of being ripe. However, extensive investigations by the department have shown that the sweating process does not ripen the immature fruit.

One of the tests to determine whether or not an orange is mature is the so-called eight-to-one test. This test is based on the ratio of the soluble solids to the acid contained in the juice of the orange. The soluble solids increase as the oranges ripen, while the acid decreases. The oranges are considered immature until the juice contains soluble solids equal to, or in excess of, eight parts to each part of acid contained in the juice. The amount of soluble solids in orange juice is about equivalent to the amount of sugar it contains. The ratio of the sugar to the acid in the juice determines the sweetness of the orange. In the case of grapefruit, maturity is indicated by a ratio of seven parts of soluble solids in the juice to one part of acid.

Fur-bearing animals are now protected by general laws fixing close seasons in 26 States and Alaska, and in all the Canadian Provinces except Yukon. Thirteen additional States have close seasons for one or two species of fur animals. Federal laws prohibit the shipment in interstate commerce of wild animals killed in violation of State laws or the shipment of the skins of such animals.

There is no agricultural product that is so neglected as American cotton. The careless wrapping, the sampling abuses, indifferent storage, and country damage all combine to illustrate in a most striking manner the utter disregard of consequences and careless indifference which exists in the handling and marketing of this important and valuable crop. In no other case does a farmer care for his product from the time it is planted in the spring until it is harvested in the autumn and then expose it to all kinds of weather and abuse.

CLEANING SILVERWARE.

Department Recommends Electrolytic Method—Simple Homemade Outfit Gives Satisfactory Results.

An easy and effective method of cleaning tarnished silverware by boiling in a soda and salt solution in contact with a clean piece of aluminum or zinc is recommended to housewives by the department as a result of studies made by its specialists in home economics. The necessary procedure is so simple that it may be followed successfully in practically any home.

The cleaning system known as the electrolytic method has been well recognized for several years.

What the Electrolytic Method Is.

The tarnish which occurs on silver is not due to oxidation, but is dependent entirely upon the action of sulphur. In most cases the source of the sulphur causing tarnish is rubber, wool, foods like eggs, and the sulphur in the air due to burning illuminating gas and coal. The electrolytic cleaning method depends on the facts that this tarnish of silver sulphid is slightly soluble in the hot solution employed, and that it is broken down chemically and its silver content redeposited on the ware when the proper electrical conditions prevail. The presence of both the silver and the aluminum or zinc in the hot solution provides the necessary electrical conditions. Under this method, therefore, practically all the silver in the tarnish is returned to the object being cleaned. When silver polishes are used, on the other hand, all the silver in combination in the tarnish is removed.

Methods Recommended.

In the cleaning method recommended by the department the necessary materials are a graniteware cooking utensil deep enough to allow the silverware to be covered by the solution; a clean piece of aluminum or zinc, preferably the former; and baking or washing soda. The solution, consisting of a teaspoonful of baking or washing soda and a like amount of table salt to each quart of water, is brought to a boil in a graniteware or enameled utensil. A sheet of aluminum or clean zinc is dropped in. The tarnished silverware is then immersed in the solution so that it is in contact with the sheet of aluminum or zinc. The tarnish should disappear in a few seconds. The silver object should then be removed from the solution, rinsed, and dried with a soft cloth.

Aluminum is much more satisfactory than zinc for use in this cleaning process, since it does not become coated with a layer of carbonates which would interfere with the chemical reaction. Zinc does form car-

bonates and, if used, must be cleaned frequently in dilute hydrochloric acid. A small sheet of aluminum may be purchased, especially for silver cleaning purposes, or a piece of an old aluminum utensil well cleaned may be used. Utensils which would later be used in cooking operations should never be employed in cleaning silverware by the electrolytic method. If very large pieces of silver are to be cleaned and a container is required larger than can be placed conveniently on the stove, the hot solution may be poured into such a vessel and the silver object then immersed. The method is most effective, however, when the solution boils during the cleaning process, and efficiency is rapidly lowered as the temperature of the solution falls below the boiling point.

Special Considerations.

The electrolytic method gives the cleaned silver a satiny finish after several cleanings. If a burnished surface is desired, the silver must from time to time be polished lightly with some abrasive polishing material such as powdered whiting. The study made by the department specialists included a comparison of the amount of silver lost when the whole tarnish was removed by polishing and when the electrolytic method was used. It was found that when whiting paste was used as an abrasive, spoons lost nearly 0.01 of a gram of silver each, approximately twenty-five times as much as when the "homemade" electrolytic method was employed.

AT THE END OF THE GOOD ROAD.

To see what really happens at the end of the good road, a public road specialist of the department recently had observations made in different sections of the country. The observers noted many country-bound teamsters who drove two loaded wagons, hitched one behind the other, to the end of the good road, and then found it necessary to leave one wagon by the roadside to be returned for later, while all the power of their teams was devoted to hauling a single wagon over the unimproved road.

Farmers bound for the market frequently were seen to haul wood and similar products to the beginning of the good road, there dumping them, and returning for a second load. When this arrived, the two loads were consolidated and easily hauled by a single team the remaining distance to market over the improved highway.

In one section of the country where oxen are still used teamsters were observed to bring their loads over the dirt roads with two or three yokes of oxen. When the beginning of the good roads was reached, the teamsters would unhitch the extra animals and finish their journey with a single yoke.

GAME LAWS FOR 1916.

Federal and State Regulations to Control Hunting—Increased Protection to Migratory Birds.

The effectiveness of the movement to protect migratory birds on the North American Continent has been greatly increased by the ratification of a treaty between the United States and Great Britain extending uniform protection in the United States and Canada to birds migrating between the two countries. This is shown in the annual publication of the Bureau of Biological Survey of the department, relating to game laws, recently issued. The publication, Game Laws for 1916, is issued as Farmers' Bulletin 774.

Besides the ratification of the treaty with Great Britain, the most important occurrences during the past year relating to the regulation of hunting in the United States include the change in classification of West Virginia, Kentucky, Missouri, Kansas, Utah, and Nevada, from the wintering zone for migratory birds to the breeding zone, and the creation of several additional national parks and monuments which become bird reservations.

In addition to changing the State classifications, the amended regulations issued by the President permit shooting on the Mississippi River above Nebraska City; open the season on certain shore birds during the last two weeks in August in New Jersey, Delaware, Maryland, and Virginia, and on reed birds on and after September 1 in North Carolina and Georgia; open the waterfowl season somewhat earlier in Massachusetts, New York, New Jersey, South Carolina, and Georgia; prohibit shooting of migratory birds in every State after February 1; protect wood ducks at all seasons throughout the United States instead of in zone 1; and protect shore birds in California and woodcock in Kentucky until 1918.

Two new national parks, one on Mount Lassen, Cal., and the other on Mount Kilauea, in Hawaii, were established by Congress; bills were passed accepting the cession of State jurisdiction over the Crater Lake, Oreg., and Mount Rainier, Wash., National Parks, with provision for resident commissioners and enforcement of the laws, and amending the Yellowstone Park act so as to facilitate protection of the park and prevent poaching. Provision has also been made for the establishment of game preserves on lands purchased for the Appalachian forest. Under Executive proclamement the Sieur de Monts National Monument of about 5,000 acres on Mount Desert Island in Maine was created on July 8; and by Executive orders two new bird reserves were established, one on Goat Island, in San Francisco Bay, Cal., on August 9, and the other, comprising four lakes on the Platte reclamation project in Nebraska, on August 21.

As a result of legislation in 1916, Virginia and Mississippi were added to the States having State officers to administer the game laws. All but two States—Florida and Nevada—now have such officials. During the year, Virginia repealed all laws in conflict with the Federal migratory-bird law. Eleven States had previously made their laws conform in whole or in part to the Federal laws. These States are California, Connecticut, Maine, Michigan, New Hampshire, Tennessee, West Virginia, Illinois, and Washington.

Under present conditions, the publication shows, deer hunting is permitted in 36 States, in about a third of which the hunter is limited to one deer a season and in most others to two. Sixteen States and Alaska protect does at all seasons and allow only bucks to be killed—namely, Alabama, Arizona, California, Idaho, Missouri, New Jersey, New Mexico, New York, Oklahoma, Oregon, Pennsylvania, Texas, Utah, Vermont, West Virginia, Wisconsin, and Alaska. Pennsylvania requires that deer killed shall have horns 2 inches above the hair; New Jersey, visible above the hair; Utah, visible above the head; New York, Vermont, and Alaska, at least 3 inches long; and West Virginia, 4 inches long; while California prohibits entirely the killing of spike bucks.

BRIEF NOTES.

Clean skimmed milk is a valuable food, but it should be sold as skimmed.

The Chinese make an appetizing table sauce out of soy beans, wheat, and rock salt.

The melting point of southern-made butter is higher where cattle are fed cottonseed products.

Forty-five thousand dead ducks, victims of wild duck disease, were picked up on one marsh near Great Salt Lake.

In 1904, out of the total road and bridge expenditures, $20,000,000 of the $80,000,000 was paid in labor—that is, worked out on the roads.

The so-called guaranty legend on packages of foods and drugs does not mean that the United States Government has passed on the quality of the product.

Concentrated cider, which keeps better and is much less bulky than the ordinary product, can be made by freezing and centrifugalizing, which eliminate water and leave behind sugar and flavor.

The sense of direction in migratory birds is as marvelous as it is mysterious. The familiar inhabitants of our dooryard martin boxes return the next year to these same boxes, though meanwhile they have visited Brazil.

NOON MEAL FOR CHILD.

Suggestions for Adapting the Ordinary Family Dinner to Needs of School Children.

There is no reason why the ordinary family dinner should not be suitable for school children or served in a way that adapts it to their needs, according to Farmers' Bulletin 712, School Lunches. The usual first course of meat and vegetables contains nothing, except the meat, which can not be given even to the youngest children. The vegetables, provided they are carefully prepared by simple methods, are specially needed and can often be made attractive to children by being served with a little meat gravy. As a substitute for the meat itself, milk can be provided in the case of the younger children. These articles, with the bread and butter, provide most of the food needed.

The dessert course is suitable for children as well as for grown people, unless it consists of rich pastries or puddings. The latter are not considered wholesome for children, if for no other reason than that they are likely to lead to overeating. Such desserts as fruit, fresh or cooked, with cake; cereals with milk, or cream, and sugar; custards and custard puddings; gelatin dishes; simple ice cream; water ices; and other simple desserts may be given.

Whether or not the family meal is healthful for children depends not only on the food materials selected but also on the way in which they are cooked. Simple methods are to be preferred from the standpoint of health as well as from that of the housekeeper's time. All dishes that are likely to contain overheated and scorched fats, such as foods carelessly fried in a pan in a small amount of fat, should be avoided. Deep-fat frying is open to fewer objections, since, if properly done, foods will absorb little fat and the fat will not scorch. Vegetables cooked in water or in their own juices and seasoned with salt and a little butter or cream are easier to prepare than those that are served with white sauce, scalloped, or cooked in other elaborate ways.

What is said above applies equally to all meals. There is, however, one special precaution that applies to the noon meal when it is hurried. This refers to tough, hard foods that are likely to escape proper mastication. It is a mistake to think that the foods given to children must always be soft or finely divided, for children's teeth need exercise quite as much as their muscles do. When time for eating is limited, however, it is well to omit foods that are difficult to chew, and in extreme cases it may be necessary to serve only soft or finely divided foods—sandwiches made from crustless bread with finely chopped fillings, for example. Before resorting to this, however, it is well to make sure that the time for eating and for insistence on good table manners is not unnecessarily cut short. The advantage of putting the meal on the table promptly and of having foods served in individual portions, or at least ready to eat when they are brought to the table, should be kept in mind. To have the meat already sliced and the dessert in cups instead of in one large dish from which individual portions must be served, and to follow the same general plan with other foods, may change a hurried meal into one at which there is plenty of time for attention to details essential to health and good manners.

If special lunches, different from those prepared for the family in general, are to be given to school children, the following are suggested as bills of fare. They are only typical and many others might be given which might be just as good.

Suggested Bills of Fare for the Home Lunch.

1. Eggs, boiled, coddled, poached, or scrambled; bread and butter; spinach or other greens; cake.
2. Beef stew with vegetables; milk; crisp, thin tea biscuits; honey.
3. Dried bean or pea purée; toast; baked apple; cookies.
4. Vegetable-milk soup; zwieback; rice with maple sugar and butter or with milk or cream.
5. Potato chowder; crackers; jelly sandwiches.
6. Cold meat; creamed potatoes; peas; bread and butter; frozen custard or plain ice cream and plain cake.
7. Lamb chop; baked potatoes; bread and butter; sliced mixed fruits; cookies.
8. Baked omelet with spinach, kale, or other greens; bread and butter; apple sauce; cake.
9. Milk toast; string beans; stewed fruit; cake.
10. Boiled potatoes; codfish gravy; bread and butter; lettuce; custard.

PURITY OF COTTON SEED.

Community Culture of Single Type Most Effective—Cleaning Machinery Before Ginning Advised.

In order that the purity of his cotton seed may be preserved for planting, the farmer patronizing the ordinary custom gin should see to it that all seed are carefully cleaned from the machinery, transportation channels, and receptacles before operations are begun on his seed cotton, says a recent publication of the department, Farmers' Bulletin 764, Cotton Ginning Information for Farmers. Under ordinary practice a small amount of seed from the bale last ginned is left in the "seed roll" which fills a portion of the machinery, and this is passed on with the seed of the next bale, seed from the latter bale being left in turn.

Often the ginner will be so busy on an ordinary day that it will be impossible for him to spare the time necessary to clean the gin properly. It may be well, therefore, for the farmer to save the cotton from which he wishes to preserve the seed until near the close of the ginning season, when the pressure of business on the gin is not so great. It must be kept in mind by the farmer striving to improve the type of his cotton through seed selection that he can not be assured of getting even relatively pure seed from the gin without the cooperation of the ginner.

Since there are many opportunities for seed passing through gins in general use to become mixed with seed of inferior quality, it is pointed out by the department's specialists that the most effective plan for preserving the purity of seed is for each community to determine by experiment the particular variety of cotton which is best suited to its section, and for the farmers to agree to plant that variety only. With the present practices in ginning and the custom of planting different varieties indiscriminately in the same locality, say the specialists, it is only a question of time until all varieties, no matter how well selected, will descend to one mongrel type.

Much the same mechanical conditions which make the mixing of seed from different bales a common occurrence in ginning bring about the "plating" of bales of fiber. The ginner, in his anxiety to crowd the capacity of his gin, frequently does not allow a sufficient length of time for each wagonload of seed cotton to be ginned completely. His estimate may be sufficiently correct, as far as the actual amount of cotton is concerned, but there is a possibility that each bale will get a few pounds of lint from the preceding load, and in turn will leave a like amount of cotton for the next bale. Thus the bales are not only plated, but, as they often are not of the same grade, the better bale may be penalized down to the value of the lower grade, as the grade of a bale is usually determined by the lower side.

Flies can be kept from breeding in manure piles by the addition of a small quantity of cyanamid, which kills the larvæ and at the same time adds to the fertilizing value of the manure.

When alfalfa is stacked the center of the stack should always be kept full and well packed during the whole time of building, and the top of the stack should be well covered with canvas, marsh hay, or some kind of fine grass which will turn water, and then be weighted to resist the effect of the wind.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1918

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., NOVEMBER 22, 1916. No. 16

WHAT GOOD ROADS DO.

Increase School Attendance, Improve Social Conditions, and Enlarge Business Transactions.

A 15 per cent increase in the proportion of the available children attending schools took place following the construction of good roads in 8 counties studied by the Office of Public Roads and Rural Engineering of the department it is shown in a recent publication of the office, Department Bulletin No. 393. The improvement in roads was followed also in several of the counties, the report shows, by consolidation of a number of the little one-room schools into graded schools, which give the pupils better educational advantages; by a development of various industries; and by social improvements due to easier intercourse. These improvements are related closely to increases in land values and decreases in hauling costs, effects also traced to the construction of improved roads. The studies were made in Spotsylvania, Dinwiddie, Lee, and Wise Counties, Va.; Franklin County, N. Y.; Dallas County, Ala.; Lauderdale County, Miss.; and Manatee County, Fla.

In Spotsylvania County, Va., the average daily school attendance increased from 57 per cent of the enrollment before the roads were improved to 77 per cent after. Several small schools were consolidated. Between 1909, the year preceding the building of good roads, and 1913, the year following their completion, the shipment of forest products, the principal products of the county, increased more than 78 per cent. The increase during this period in the poultry business in the county was 77 per cent, and in dairying 110 per cent.

In Dinwiddie County, Va., the average daily attendance for children for 13 schools on the improved roads was 63.4 per cent of the enrollment in 1912–13, while the average attendance for all other schools in the county was 56 per cent. Several school consolidations have been effected, larger school buildings have been constructed, and pupils have been transported to school at the expense of the educational system since the road improvements were made. Truck gardening and dairying, which were profitable only within 3 miles of the principal market town of the county before the road improvement, are now carried on profitably within a 7-mile radius.

In Lee County, Va., a considerable industry has been built up following the road improvements in the shipment of tan bark, extract wood, and pulp wood, products which could not be profitably hauled over the unimproved roads. The improved highway system has attracted buyers of farm products who travel from farm to farm and furnish a new cash market for the farmers. There has been a 25 per cent increase in buggies sold by a county vehicle factory.

In Wise County, Va., social conditions have been bettered since the good roads were constructed, many farmers along the improved highways having built new homes or improved old ones, adding sanitary conveniences. School attendance has increased materially, but since compulsory attendance regulations went into effect about the time the improved roads were completed, the influence of the two factors could not be determined separately. Several school consolidations have been made.

Automobile registrations in Franklin County, N. Y., increased from 371 before the road improvement in 1912 to 853 after road improvement in 1914, and two automobile bus lines connecting distant towns in the county were established as soon as the improved roads were opened.

There has been a notable stimulation of dairying and general diversification on the farms of Dallas County, Ala., since the improvement of the roads of that county.

In the section of Lauderdale County, Miss., where most of the roads have been improved, the school attendance increased from 72 per cent of the enrollment in 1912, just after the road work started, to 81 per cent in 1913 after the completion of the work. Several school consolidations have been effected.

In Manatee County, Fla., which produces chiefly fruits and vegetables, these products could not be hauled over the sandy roads before the improvement was made, except at prohibitive cost. In the one year, 1912–13, following the completion of the good roads, the area in vegetables increased about 1,500 acres. The products of the county, the study shows, are now hauled to railway points much more cheaply than formerly.

The best results in the control of the grapeberry moth have been obtained by spraying with arsenate of lead at the rate of 3 pounds of the paste to 50 gallons of water, applied immediately after the falling of the grape blossoms and again about two weeks later.

MARKETING MEATS.

Study of Conditions Controlling Distribution of Live Stock and Meat Food Products.

With its utilization of $2,000,000,000 worth of raw products annually, which makes it the most important single industry in the United States, the production of meat animals has given rise to some of the largest problems found in the marketing of the food commodities of the country. To a large extent these problems are traceable primarily to the great size of the country and to the existence of the cattle raising, the cattle fattening, and the marketing and slaughtering phases of the industry in three more or less distinct regions, for the most part outside the region of densest population and, therefore, of greatest consumption demand.

The central problem in the live-stock industry from the point of view of the stock raiser is, of course, to produce and sell his animals at a profit. This he has found more and more difficult in spite of the decrease in production, the increase in demand, and the marked rise in the prices of meats. At the same time shippers and dealers have encountered special problems and the consumer has found the purchase of his usual quantity of meats an increased burden because of increased prices. In an effort to help in the solution of these various problems and to find, if possible, ways in which market prices may be stabilized, wastes eliminated, and marketing costs reduced, the Office of Markets and Rural Organization of the department began special work in 1914.

The prominent features of the live-stock industry in so far as cattle, its chief product, are concerned, are the raising of the animals in the range country of the West, the transfer of many of the cattle so raised to the corn belt to be fattened for market, and the marketing of the finished animals. In the raising of hogs and sheep there is less transferring of the animals from the point where their production is begun to other places for fattening. These animals, like cattle, however, largely are produced in sections of the country more or less remote from the consuming centers. This separation of the producing from the consuming regions has been the principal factor in bringing about the establishment of about 35 central markets in the United States where live stock both for slaughter and feeding purposes are sold.

These central markets have been instrumental, in turn, in building up large packing establishments which are now the principal buyers of cattle for slaughter. Other elements of the marketing machinery which have grown up are stockyards in which the cattle are cared for and fed while transactions are being negotiated; commission merchants; traders, who sort and sell the cattle by classes; and banking institutions, through which the transactions are financed.

Throughout that portion of the United States east of the Rocky Mountains the stockman or farmer with more live stock to market than can be sold to near-by butchers, must either ship to the central markets or sell to local buyers who assemble the stock of numerous producers and themselves ship to the central markets. While some producers sell in this latter way, others feel that the method is not so profitable as disposing of stock on the central markets. Large producers taking this view may ship carloads of live stock on their own account, but the numerous small cattle raisers of the country commonly find that it is impossible to ship less than carloads and that such shipments are unprofitable in many ways even when possible. This difficulty is being overcome largely in many portions of the country by the formation of cooperative shipping associations, a movement in which the Office of Markets and Rural Organization is assisting by giving information as to methods of organization, operation, and accounting. Two bulletins have been published on the subject.

Where shipments to the central markets are made by individual stock raisers or associations of producers the chief problems of such shippers on the markets are concerned with price fluctuations, which are greater for live stock than for most other food products, and with the marketing costs which the complex machinery of the central markets entails. All the elements bringing about radical price fluctuations are not generally understood. Some of the factors are supply and demand on the markets at a given time, and the operations of buyers, commission men, traders, and other market interests. To what extent the variations in the seasonal and daily supply of stock influence the fluctuations is not definitely known. Because the beginning of feeding operations in fattening stock is largely determined by the harvest dates of the hay and grain crops, the bulk of the fattened stock reaches the central markets in late winter or early spring. There is likewise in the fall a large influx to these markets of cattle fattened on grass, as well as cattle started on grass and sent to the markets for sale to producers in the corn belt who will fatten them in feeding lots during the winter. It is believed that the resulting congestion can in a measure be lessened when conditions make possible the finishing of feeders at somewhat earlier or later times than usual.

Besides the seasonal variations in receipts at the central markets there are marked daily variations. These, it is believed, should be more easily corrected than the seasonal variations, since the former are due almost wholly to custom. On the Chicago market, for example, 77 per cent of the cattle received reaches the market on two days of the week—Monday and Wednesday. The Office of Markets has undertaken to assist in a movement whereby stockmen, railroads, and market interests may work together for a more even distribution of market receipts throughout the week.

Another factor in price fluctuations is the lack of standardization of cattle and meat. At present, quotations on a given grade of cattle in one market can not be compared accurately with quotations for such a grade on other markets, since different characteristics may be covered by the same grade name in the several centers. The office is studying this subject and, with the assistance of various branches of the live-stock industry, is preparing standards which it is hoped will be adopted generally.

Recognizing the need of producers of live stock for information as to live-stock conditions and available supplies of meat animals, the Office of Markets has planned and will soon put into effect a demonstration market news service for live stock and meats, the purpose of which will be to keep producers, dealers, and consumers informed in regard to the number of live stock in various sections, shipments to the various markets, price conditions at shipping points and in the principal live-stock markets and meat-consuming cities, and other data bearing on the marketing of live stock and meats. Not only will such a service assist in the marketing of cattle for slaughter by giving producers a knowledge of advantageous marketing times and places, but, it is believed, it will also help dealers by showing the demand in consuming centers for meat products, and, by performing these services, will tend to stabilize prices. It should also curtail much of the lost motion which now accrues owing to lack of information on the part of stockmen in regard to movements of stock to market from various sections.

Much of such lost motion, the studies of the office indicate, occurs in connection with the transfer of cattle from regions where they are raised to other grazing and finishing regions. There has been lost motion also, however, in other marketing operations. In some cases, it has been found, hogs raised in the corn belt and sold in near-by markets have been slaughtered at Atlantic seaboard points and the cured meats shipped to Pacific coast points. Veal dressed in dairy districts and sent to commission merchants in neighboring cities has been returned to the shipping points from which it originated to fill orders of local retailers. In many instances the convenience of marketing and financing facilities furnished by the central markets may compensate for the freights and shrinkage losses entailed by the extra transportation, but it is believed that in many other cases it would be advantageous to do away with such extra transportation to as great an extent as possible. Much light was thrown on this situation by discussions of representatives of all the interests involved in the marketing of live stock and meats held at the invitation of the Office of Markets and Rural Organization in Chicago in 1915.

While the central markets constitute the most significant feature in the live-stock industry, local outlets for meat animals are of great importance. Studies of such outlets made by the Office of Markets and Rural Organization have shown them to consist principally of the sale of live animals to local butchers, the local curing of meats by ice plants, and farm slaughtering with the sale of fresh or cured meats and meat products. Abattoirs which have been established by municipalities or under municipal control in a number of cities in various parts of the country have been studied and it has been found that these institutions are facilitating the sale of locally slaughtered meat. This result has followed because the consuming public has had its confidence in local meats increased by the banishment of the old-fashioned, uncontrolled slaughterhouses and their replacement by institutions under a control insuring the use of sanitary methods.

Home killing is practiced chiefly in connection with hogs, though, to a less extent, cattle and sheep are home slaughtered. In some sections of the South the home slaughtering of hogs and the curing and sale of hams and other products has constituted a well-established industry for many years. More recently local ice plants have begun curing meat for a fee, or buying it from farmers to be cured and sold. In a few sections also small local packing plants have been established and are a convenient and profitable outlet for relatively small quantities of meat animals. In the opinion of the specialists of the office meat prepared in these ways on a small scale will have to be sold almost wholly within or near the localities where it is produced.

In the operation of the marketing systems for live stock and meat in general the office has made cost studies of a number of typical transactions which have shown that the share of the final price paid by meat consumers which goes to the producer does not vary greatly whether the marketing is through central markets or through local butchers. It was found when cattle passed through the centralized markets that from 66 to 75 per cent of the gross returns ordinarily was received by the stockmen, from 2 to 5 per cent was absorbed by marketing expenses, 2 to 9 per cent was received gross by packers, and 8 to 33 per cent by retailers. This does

not indicate the percentage of profit of the various parties, but merely the proportion received by each of the gross amounts paid by the consumers. When sales were to butchers in most cases approximately two-thirds of the gross returns were received by the owner of the cattle, while the retailer's share was about one-third of the gross returns.

The problems of the consumer in the marketing of meats are also receiving consideration by the Office of Markets and Rural Organization. It is believed that the standardization of meats and the publication of information in regard to supply, demand, and prices will prove beneficial to consumers as well as to others interested in the meat industry. The office recognizes also that the average consumer has little technical knowledge in regard to cuts of meat, and that he therefore often passes by cheaper cuts of high nutritive value. It is the intention of the office to make further studies of this subject with a view to supplying practical information.

BRIEF ITEMS.

Birds migrating at night average longer flights than the day migrants.

The laxative properties of fruits and vegetables are not destroyed by canning them.

By the use of hopperdozers as many as 300 bushels of grasshoppers have been collected on 100 acres of alfalfa.

The nighthawk performs the longest migration journey of any land bird. Its trip is 7,000 miles, from the Yukon to Argentina.

A way of making a delicious table sirup from muscadine grapes is announced by the United States Bureau of Plant Industry.

The files of the United States Department of Agriculture contain more than 1,000,000 cards concerning the distribution and migration of North American birds.

There has not been a serious general outbreak of the Rocky Mountain locust since 1880, and this particular grasshopper has ceased to be a pest of any great importance.

The juice of grapes, apples, and many other fruits can be concentrated without heat by means of the freezing method developed by the United States Department of Agriculture.

The roundheaded apple-tree borer may be greatly reduced in numbers by destroying the common service tree when in proximity to orchards. It has been found that the tree is a favorite food plant of the insect.

The Arctic tern holds all records for length of migration. When the young are full grown the entire family leaves the Arctic regions and several months later is found skirting the edge of the Antarctic continent.

ATTRACTING BIRDS.

Suggestions for Protection, Feeding, and Provision of Nesting Facilities in Northwestern States.

Lovers of birds in the northwestern portion of the United States who wish to attract the feathered wild creatures to live and nest about their homes may receive valuable suggestions as to methods of protection, feeding, and the provision of nesting places from Farmers' Bulletin 760, recently published by the department. The publication relates to Washington, Oregon, Idaho, northern California, and the western half of Montana, and is the second of a series of bulletins suggesting methods of attracting birds in various sections of the country.

Protection.

One of the first steps a householder must take if he wishes to attract feathered wild life about his place is to provide protection from natural foes, especially cats. If a complete bird sanctuary is to be created, the area set apart for this purpose should be inclosed by a vermin-proof fence, which can neither be dug under nor climbed. The principal feature of such a barrier is a top curved outward or bent outward at right angles. If the construction of such a fence is impracticable, a more limited protection may be supplied by placing guards on trees to prevent cats and other animals from climbing them. Sheet-metal cuffs, completely encircling the tree, or cones of like material, fitting tightly at the upper edge and flaring downward, will serve the purpose.

Another essential is to furnish breeding places. Close-growing shrubs make excellent sites for nests. They should be trimmed back severely when young to produce numerous crotches. Bird houses also should be placed about the home for the species which will use such nesting places, but care should be taken that too many such houses are not furnished. As a rule, birds do not like being crowded. If breeding places are to be provided for ground-nesting birds, such as bobolinks, meadow larks, and bobwhites, grass should be allowed to grow thickly and long in appropriate locations.

Water and Food Supply.

For all birds some sort of bathing and drinking pools should be furnished. These may be either on the ground or raised and may be of pottery, stone, metal, or cement. Both the edges and bottom should be somewhat rough. The water receptacle should be shallow and should slope up gradually toward the edge.

The vital factor in attracting birds is the food supply. This may be furnished either by providing artificial food, such as crumbs, suet, chopped nuts, and the like, or by planting trees, shrubs, and herbs which will produce fruits or seeds that the birds themselves may gather. Winter feeding is the most familiar phase of bird feeding, but there is no reason why birds should not be attracted throughout the year by a supply of food.

For artificial feeding the biologists of the department suggest the use of several devices. A food shelf may be placed against the side of the house near a window, or a food tray may be fixed to the top of a post. An excellent food receptacle may be made by cutting a hole in a coconut and stuffing the shell full of chopped suet and nuts or some other food mixture. The shell can be hung from a limb. Holes bored in pieces of thick lumber may be used instead of a cavity in a coconut. Feeding hoppers like those used for poultry may be employed for birds on food shelves or on the ground. A wooden house open on one side, mounted on a pivot, and provided with vanes to keep the open side away from the wind also may be used as a feeding place.

Natural Feeding.

If it is desired to feed the birds naturally, there are a number of plants that may be grown which will be ornamental, and at the same time, will furnish good provender for the feathered guests. For seed-eating birds in the Northwest the list suggested by the Department of Agriculture includes prince's feather, love-lies-bleeding, asters, Calandrinias, blessed thistle, Centaureas, California poppies, sunflowers, tarweed, forget-me-nots, *Polygonum orientale*, *P. sachalinese*, portulaca, Silene, and sugar cane. Other seed-bearing small plants that may be grown are the various millets, Canary grass, and the various species of Pennisetum. Among the trees bearing seeds relished by birds are the alders and birches. The red-polls, siskins, and goldfinches are particularly fond of these tree seeds during the winter. Ashes and box elders furnish seed relished by evening grosbeaks, while larches and pines and other conifers are attractive to crossbills as well as to some of the species just mentioned.

The fruit-eating birds may be attracted in great numbers by the planting of fruit-bearing shrubs and trees. The best of the long-persisting fruits in the Northwest are juniper, bayberry, thorn apples, and related fruits, holly, and snowberry. A large number of other fruit-bearing plants are listed in the bulletin already mentioned, and the period of fruiting of each is shown on a chart. One of the advantages of planting wild fruit-bearing trees and shrubs, it is pointed out, is that the birds are fonder of these than of the cultivated fruits, and the latter, therefore, will be protected.

Copies of the bulletin may be had free on application to the department as long as the supply lasts.

LIVE-STOCK BREEDING.

Success of Cooperative Effort Demonstrated by 136 Community Associations in Wisconsin.

There are some sections of the country that have become noted for the quality of the live stock they produce. In most instances this is found to be the result of concentrated effort. The State of Wisconsin offers a splendid illustration of what can be accomplished through community breeding associations. Here are to be found 136 organizations devoted to the breeding of high-class live stock. Of this number, 108 are promoting cattle of the different dairy breeds; 2, beef cattle; 10, horses; 2, swine; and 14, general live stock. These associations have met with marked success and prove conclusively that community live-stock breeding is not an experiment when thoroughly organized and properly conducted. Livingston County, Mich., and a considerable section of New York, particularly the region adjacent to Syracuse, are famous for their dairy cattle. In Iowa prominence has been gained in swine raising. The blue-grass region of Kentucky, noted as the center of American saddle-horse breeding, affords a further example of the success resulting from unity of effort and purpose. There are still other sections where attention is being given to the production of the different classes of live stock. Each is noted as a breeding center, and buyers who pay the highest prices are attracted from other States and even foreign countries.

The organization of a community or cooperative live-stock breeders' association requires the services of a leader, as do all movements that have for their object the improvement of unsatisfactory conditions. The leader in an enterprise of this kind should be one of the successful breeders of the community—aggressive as well as progressive. With such a man at the head of the movement, little trouble should be experienced in interesting others and securing their cooperation. A preliminary organization should be effected, a committee appointed to draft a constitution and by-laws, and a definite breed selected which the association is to promote.

The selection of a breed is of great importance. If the best results are to be gained, individual taste should be disregarded and a breed selected which has proved profitable in the community. The action taken in this respect should be unanimous, and every effort should then be made in improving the type of stock to which the organization is committed. When the breed has been decided upon, the first step is to procure a number of sound pure-bred sires of that breed to be mated with the females owned by the members. If there are a few good privately owned sires already in the community they can be put out for service and the expense divided on a pro rata basis.

If additional sires are found necessary, it should be possible for the association to secure them at a considerable saving in price through the selection of a committee of competent men authorized to make the purchases. It will in some cases be advisable to have a qualified veterinarian as one member of the committee.

At the opening of the breeding season the sires should be placed at the most convenient points and put in the hands of capable and efficient men who understand the breeding question and who will take proper care of the animals in their charge. After each second season it may prove advisable to change or shift the sires. This will allow each breeder to procure the service of a new sire and at the same time make it possible to determine which are the best producers so that those not making good can be disposed of.

A sufficient number of the best females from the successful sires should be retained, and in some cases male offspring may be put into service in the neighborhood. This will obviate the necessity for any further extensive purchases and give a constant supply of good blood and uniform quality. In addition, it will provide an adequate number of animals to take the place of those that die, are injured, or sold. The serviceable sires crossed with the females retained will be of incalculable value in the continued production of animals of outstanding merit.

One of the reasons for the lack of uniformity in the quality of our live stock is the fact that many of our individual farmers and breeders have not adhered to one type or breed of sire. The results provide a striking example of the need of organization. With the organized community many advantages are to be gained. First of all, greater interest will be taken in the proper methods of breeding, feeding, etc., with the result that a definite community type will be established and the members will work together in maintaining that ideal. United action is brought about in the prevention and eradication of disease, combined action along this line being far more effective and economical than individual effort. The good effect of combined action on the part of the breeders of a community in preventing the spread of such a disease as hog cholera, for instance, can readily be appreciated. Much can also be accomplished in a similar manner in stamping out contagious diseases among other classes of live stock, and by the adoption of proper sanitary methods further outbreaks in the community can be avoided. A reputation for sound, healthy stock is a most desirable and valuable asset.

Additional advantage is obtained in marketing the surplus stock. The individual breeder is compelled to seek his own market. A further drawback is the higher freight rate and lack of railroad facilities owing to shipments having to be made in lots of less than a carload. With the organized community the market is established and freight charges are reduced by carload shipments, which may be made up of stock belonging to several persons. Shipments made in this way insure better railroad service, and the small breeder shares with the larger breeder the benefit of reduced transportation charges.

The successfully organized community centralizes the matter of buying, and purchasers will pay better prices than would be the case if they were compelled to go to the added expense of traveling from place to place in order to get the required number of animals of the quality they desire. These satisfied customers will be an additional agency whereby the reputation of the community and the quality of its live stock will be spread to other sections and States.

Additional publicity is to be gained through advertising. Attractive, well-prepared advertising judiciously placed is an important factor in drawing attention to the community as a breeding center and attracting customers.

Through the regular meetings of the association the members are brought in contact with each other, matters of general interest are discussed, a spirit of friendly rivalry is stimulated, and a more neighborly feeling prevails. These meetings will also have much to do in maintaining the proper enthusiasm so essential to the success of the organization and the good of the community in general.

It will also be found desirable and helpful to have occasional addresses by prominent stockmen and scientists from the State agricultural colleges and experiment stations. In this way various subjects are discussed in detail and many difficult problems solved.

The history of the associations and districts mentioned is one of continued success. Their growth and influence have been marked, and their example can well be followed by other sections where such organizations do not exist. The department gives assistance, through its agents in the field, in forming local associations for live-stock improvement.

Bonds to raise money for improvement of country roads should not be sold until the funds are actually needed. In one county where the system of financing roads was studied recently by road specialists, it was found that the premature sale of bonds involved a loss aggregating as much as $5,000. The county got the money before it could use it in building the roads and had to pay interest on this money much in excess of what it could obtain on its cash balances in the bank.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1918

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., NOVEMBER 29, 1916. No. 17

COOPERATIVE STORES.

Indirectly Beneficial to Communities—Principle Right but Business Methods Poor.

While cooperative stores in the United States are relatively unsuccessful as compared with typical cooperative stores in European countries, the lack of success is not due to the failure of the underlying principles of such enterprises to hold good in America, but to the business methods generally followed in such undertakings in this country. This conclusion has been reached as a result of a survey of 60 cooperative stores made by the Office of Markets and Rural Organization of the department, the findings of which are published in Bulletin 394. In the many American cooperative stores which have failed, mismanagement, inadequate accounting and auditing, lack of cooperation, poor business methods, and lack of judgment are responsible.

The results of the survey indicated that the cooperative store has tended to bring about lower prices, smaller margins of profit, more efficient business methods, and other practices beneficial to the farmer. Higher figures are quoted frequently for produce sold by farmers, in communities in which cooperative stores exist, because of a stimulation of the local market.

With the application of efficient business methods and the education of the farmer to a clear understanding of the functions of cooperative stores, say the authors of the bulletin, American cooperative stores may be made successful. Instances are cited of unusual savings and large dividends to members of various associations. Such associations procure capable managers, it is pointed out, by paying adequate salaries; take advantage of large-scale purchasing and cash discounts; maintain proper accounts and cost records; and watch stock turnovers. The cooperative store in general, it is pointed out, has very great possibilities in this country if the farmer can be made to understand this necessary relation of efficiency to financial success.

The more general, underlying conditions which investigations indicated should be present if a cooperative store is to be successful are: (1) Good leadership among the members and prospective members, (2) capable management, (3) favorable environment, with regard both to physical location and to social or occupational affiliations, and (4) adequate legal safeguards. The leadership should not be confined to one individual, the severing of whose connection with the enterprise might prove disastrous, but should consist in an efficient organization in which a group of leaders takes part. Only a man of good general business ability should be placed in active management of the store. The securing of such a man will involve the payment of a higher salary than is paid by most of the stores investigated. The average salary of the manager for the enterprises reporting was $106 a month.

In some of the most successful cooperative stores investigated the common employment of many of the residents of the community or their common membership in social, fraternal, or religious associations was an important factor making for success. Laws granting special privileges and creating special safeguards for cooperative associations now exist in 30 States. Persons contemplating the organization of cooperative stores are urged by the department's specialists to consider carefully all these factors before taking definite steps.

Very thin or patchy stands of alfalfa sometimes result from poor seed, winter freezing or pulling, or from fungous diseases. Attempts to thicken and improve such stands by any method of reseeding have usually proved unsuccessful. It is best in such cases to plow and prepare the seed bed anew, after which the alfalfa should be sown again.

NOTICE TO CROP REPORTERS.

With a view to eliminate waste in the distribution of the Weekly News Letter, an inquiry recently was sent to the voluntary crop reporters of the Bureau of Crop Estimates to determine those reporters who desired to continue to receive this publication.

As stated in the inquiry, those who expressed a desire to receive it will be continued on the list. In the case of those who did not reply, it will be assumed that the publication is not desired. However, crop reporters who still wish to be carried on this mailing list but who are dropped for failure to reply will be replaced on the list if they *promptly will notify* the Chief of the Bureau of Crop Estimates that they desire to receive the Weekly News Letter.

MARKETING POTATOES.

Greater Care Necessary in Digging and Handling, Say Specialists—Standardization Needed.

In order that the present large losses of potatoes may be eliminated and that conditions in the potato-growing industry may be bettered in general, growers should exercise more care in digging and handling the tubers, should work toward the establishment and strict observance of grades, and should carefully study marketing needs and conditions. This is the advice of specialists of the Office of Markets and Rural Organization of the department in a recent publication, Farmers' Bulletin 753, Commercial Handling, Grading, and Marketing of Potatoes.

Early and Late Potatoes.

There are two definite crops of potatoes in this country each year: The southern early, or "new" potatoes, which are perishable, and the northern late potatoes, which are only semiperishable. The treatment of these crops must differ considerably. In the South digging begins in Florida, Texas, and southern Louisiana in May and is done mostly by forks and plows. In some of the hotter sections it has been found advisable to plow up the potatoes in the late evening and pick them early the following morning. Picking into rectangular, open-slatted crates, the slats having rounded edges, has been found most satisfactory. The potatoes should not be hauled loose in wagons, since such treatment may bruise them seriously. For shipment the southern potatoes are packed in hampers and double-headed barrels in Florida, and in barrels with burlap covers in other States along the Atlantic coast. In Texas sacks are used.

Grading for the southern potato crop has been rather extensively adopted with good results, the graded potatoes bringing better prices. Mechanical graders are used in some sections.

The marketing of the southern crop is effected largely through cash buyers at shipping points. Shipments are also made through distributors and on consignment to agencies in distant markets. In some sections, it was found, cooperative associations of growers handle the marketing, achieving

successful results. One of the largest of such associations operates along the eastern shore of Virginia. This association sold over six million dollars worth of potatoes in 1914. This organization, like others of its kind, grades strictly and makes use of definite brands for the best grades of potatoes. It insists that the potatoes bearing its brand shall be bright, free from second growth, disease, and other defects. Scabby, worm-eaten, or sunburnt potatoes are barred. Associations operating on the same general plan exist in most of the other Southern States.

Northern Potato Crop.

Northern, or late potatoes, are dug in August and September. Forks are used to a certain extent for digging this crop, but most of the acreage is dug by plows and digging machines. For the successful use of the latter, soil conditions must be good. Under favorable conditions the use of such machines has been found profitable. There is much loss from bruising potatoes in all types of digging. Deep plowing with plows and machines should eliminate most of such losses.

Picking in the North is mostly by hand, but some combination digging and picking machines are in use. If the potatoes are to be graded as picked, growers should carefully instruct pickers in the work, since the inclusion of a few diseased, cut, or defective potatoes is sufficient to discount an entire shipment, the selling value being largely determined by the poorest tubers in the lot rather than the best. Even the less perishable northern crop may be injured by hauling from the field loose in wagons. This practice usually involves subsequent handling, often with shovels and scoops, which further bruises the potatoes. A good practice, say specialists of the department, is to pick the potatoes into open-slatted crates and haul the filled receptacles to storage or grading houses or to cars.

Grading.

Many sizing machines are used in the North to grade potatoes and, since they give more accurate results than hand grading, their use should be extended. In addition to sorting, these machines are of service in removing dirt. This is an important fact, since there are many complaints by buyers of the presence of dirt among potatoes, and greater allowances are being demanded in price adjustments on this account. The mechanical sizer simply sorts as to size and the stock must be further graded by hand to eliminate potatoes affected by sunburn, dry-rot, scabs, frost, or other defects.

All grading should be done preferably on the farm. If the grower ships ungraded stock to market, it must be graded there where labor is more costly. In addition to paying, in lower prices received, for this labor, he also pays freight on the rejected potatoes and loses the culls, which he might have utilized on the farm. Grading is facilitated where the grower has sufficient storage space for a large part of his crop. In this way potatoes which do not show the effects of frost or other damage when first dug may be detected later and sorted out before the crop is marketed. If the potatoes are shipped without sorting, the damage usually brings about rotting of the injured potatoes before the market is reached and reduces prices on the whole shipment.

Standardization.

In the bulletin already mentioned, the specialists of the department do not make specific recommendations for the adoption of standard grades, but, for the assistance of those interested in bringing about standardization, they suggest that two regular grades and perhaps a special grade for extra fancy potatoes should meet market needs. It is suggested that specifications for the No. 1 grade should be drawn to make it as good and attractive in appearance as is reasonable and practicable. These specifications should practically eliminate potatoes damaged by frost, sunburn, blight, common scab, dry rot, decay, second growth, cuts, bruises, dirt, and also undersized or coarse stock. The minimum and maximum sizes for both No. 1 and No. 2 grades are still a subject for careful investigation, discussion, and demonstration. However, a minimum of about 2 inches is maintained for grade No. 1 in a number of early or "new" potato sections, and the commonly discussed minimum for this grade is from $1\frac{7}{8}$ to 2 inches. The minimum diameter for a long variety should probably be a little smaller than for a round one. Since it is practically impossible in grading any perishable products commercially to secure a perfect grade, reasonable tolerances should be allowed. The No. 2 grade should include the better of the remaining potatoes.

The studies of the market specialists of the department indicate that there is an unnecessary diversity in the containers for potatoes in use. These now range from the 1-bushel hampers for the early Florida crop to double-headed barrels. The 2-bushel, or 120-pound, burlap bag is suggested as perhaps the most satisfactory container for general use. The lack of proper grading and packing, the specialists say, causes a large part of the marketing difficulties now experienced in the potato trade.

Marketing.

Marketing conditions in the North differ widely from those in the South, since about three-fourths of the crop is stored. Local buyers, warehousemen, and distributors are the chief factors in marketing the northern crop. The bulletin already mentioned lists eight methods of selling that growers may adopt. These are: In the field, for cash by the load at the car, to cash traveling buyers in car lots, to local warehousemen, through distributors, by wire, on consignment to a broker or merchant, or through cooperative marketing organizations. The bulletin also discusses the outlets for distributors and methods of railway billing.

WINTERING BEES.

Department Recommends That Bottoms as Well as Sides of Hives Be Insulated.

Failure to insulate the bottom of the hive largely offsets the value of insulation around the hive in the outdoor wintering of bees, according to the annual report of the Chief of the Bureau of Entomology of the department. Experiments conducted with a number of insulated hives showed that much heat was lost from the unprotected hive bottom. Insulating these bottoms was found to increase their value greatly. Manufacturers, therefore, have been advised to build insulated hives with insulated bottoms. According to the report, the choice of insulating material is of minor importance, as the materials commonly used—shavings, sawdust, leaves, and chaff—do not differ greatly in insulating value.

On the subject of insulation, the entomologist says, in part:

"Beekeepers have repeatedly claimed that excessive insulation is even more detrimental in winter than insufficient insulation, because of the failure of the colony to warm up on bright days. To test this theory, a colony was packed, in the fall of 1915, with 16 inches of sawdust on all sides, top, and bottom. Temperature records were made at frequent intervals every day throughout the winter and spring. The colony remained in excellent condition in every respect throughout the winter, being little affected by high winds, and after brood rearing began it built up with great rapidity. Then, to continue observations on the effect of insulation on the building up of the colony, the packing was allowed to remain all summer. Except for the impossibility of manipulating the colony, it remained in excellent condition. It seems clear, therefore, that beekeepers need not fear any detrimental results from abundant insulation at any season of the year."

Cotton growers who wish to maintain the purity of their seed can obtain best results either by ginning very early in the season or after the rush of the season is over, when the ginner can take greater care. It is practically impossible to maintain the purity of seed without the cooperation of the ginner, and it is unreasonable to ask him to delay his regular ginning work and keep other patrons waiting.

DEPARTMENT'S HISTORY.

Interesting Facts Connected with Inception and Evolution of Department of Agriculture.

The following facts regarding the development of the statutes under which the department has come to occupy its present broad field are taken from a brief statutory history of the United States Department of Agriculture prepared by Francis G. Caffey, Solicitor of the department and published in Case and Comment. This history since has ben republished by the department as an unnumbered circular.

Anticipatory Period.

For about 60 years subsequent to the Revolution the general interests of agriculture were left almost entirely to individual initiative. Federal activity was confined to relatively narrow limits, and was merely sporadic. There was no Committee on Agriculture in the House until 1820, nor in the Senate until 1825.

Shortly after the Revolution, following the example of Franklin while in England as agent of the colony of Pennsylvania during the years 1764 to 1775, American consuls and naval officers commenced the custom of sending home foreign seeds and cuttings for new crops, and of aiding in the introduction into the United States of new breeds of domestic animals. Even such small governmental participation was, in the beginning, rather extra-official.

From an early date after its acquisition, the public domain was availed of as a means of benefiting agriculture. In 1817 Congress provided for the allotment of certain lands, within what was then known as the Mississippi Territory, to French immigrants for the purpose of promoting the cultivation of the vine and the olive. In 1838, in recognition of services in introducing useful tropical plants into the United States, rendered by Henry Perrine, Congress granted to him and his associates a body of land in the southern extremity of the peninsula of east Florida, for the propagation and cultivation of such plants.

In 1836 the Commissioner of Patents, independently of his office, assumed the responsibility of accepting contributions of new and valuable seeds and of distributing them among farmers throughout the country, and in his report to Congress urged the creation of a depository to receive and dispense articles of this kind. The indebtedness of the people to this official for his activities along these lines has never been fully recognized, and overstatement of it would be difficult.

Preliminary Period.

In 1839 Congress made an appropriation of $1,000 for "the collection of agricultural statistics, and for other agricultural purposes." A similar item was included in the appropriations for the fiscal years 1842 and 1844, and has been repeated annually ever since the latter date. The act of 1839 was the earliest statute containing even a suggestion of comprehensive dealing with the subject of agriculture by the Federal Government.

Formative Period.

While the department was under the direction of a Commissioner the work became so enlarged and varied that it was necessary to divide it into distinct units. In 1880 Congress created six divisions—chemical, seed, entomological, statistical, microscopical, and botanical—in addition to the office of the Commissioner, the experimental garden and grounds, laboratory, museum, and library.

In 1884 a bureau of animal industry was created.

The first appropriation for investigations on forestry subjects was made in 1876. In 1886 a division of forestry was formed to carry on this work.

Expansive Period.

In 1889 the department became an executive department, having at its head a Secretary, who occupies a place in the President's Cabinet. Its functions have grown to such an extent that now they touch almost all lines of agricultural endeavor of general interest to the citizens of the United States, as well as other lines of activity related to agriculture.

The units of organization of the department have been changed from time to time, to meet growing conditions, and, as at present recognized by Congress, are 16, composed of 10 bureaus, including the Forest Service and the States Relations Service, 4 offices, 2 divisions, and the library.

POULTRY MANURE.

More Valuable Than That of any Other Common Farm Animal.

The manure produced is a valuable by-product of poultry raising. It is estimated that the average night droppings of a hen amount to 30 to 40 pounds per year. This represents the manure which can certainly be saved with the exercise of a little care. A conservative estimate indicates that this manure contains fertilizing constituents which would cost 20 to 25 cents if bought in the form of commercial fertilizers at ordinary prices. A flock of 100 hens would at this rate produce manure worth $20 to $25 per year. If, however, the manure is not properly cared for, as much as one-half of its fertilizing value is likely to be lost. To prevent loss, frequent cleaning of the dropping boards is necessary, and some sort of absorbent should be used daily. The use in moderate quantities of fine, dry loam or road dust, or, preferably, mixtures of these with such materials as land plaster, acid phosphate, and potash salts, has been recommended. Sawdust has also been used with good results at the rate of 10 pounds per hen per year mixed with 16 pounds of acid phosphate and 8 pounds of kainit. This gives a fertilizer which contains about 0.25 per cent of nitrogen, 4.5 per cent of phosphoric acid, and 2 per cent of potash, and is worth about $10 per ton at ordinary prices of these fertilizing constituents. It is a better-balanced fertilizer than manure alone, and is usually in better mechanical condition for application to the soil by means of fertilizer distributors or manure spreaders.

With the present high price of potash salts it is impracticable to use such materials in the way suggested, and it may also be impracticable to use acid phosphate. In this case somewhat larger amounts of sawdust should be used.

Sifted coal ashes may be used as an absorbent, but wood ashes or lime should not be mixed with the manure, as they are likely to cause the loss of its most valuable fertilizing constituent, namely, nitrogen (ammonia). Occasionally the litter from the poultry house may be mixed with the manure. This increases the bulk, but greatly reduces the value per pound of the manure and makes it difficult to apply to the soil, except where it is to be broadcasted and plowed in.

Poultry manure is more valuable than the manure of any other common farm animal, as the following table shows:

Analyses and value per ton of manure of different animals.

Animal.	Nitrogen.	Phosphoric acid.	Potash.	Value per ton.
	Per ct.	*Per ct.*	*Per ct.*	
Poultry	0.80–2.000	0.50–2.000	0.80–.900	$7.07
Sheep	.768	.391	.591	3.30
Hogs	.840	.390	.320	3.29
Horses	.490	.260	.480	2.21
Cattle	.426	.290	.440	3.02

Poultry manure is particularly well adapted to gardening, and poultry raisers should either use it on their own gardens or dispose of it at a good price, thus increasing the profits of their flocks.

During the past 12 years the annual expenditures on the rural roads and bridges in the United States have increased from about $80,000,000 to about 282,000,000, or an increase of more than 250 per cent. During this same period the annual expenditures from State funds for road and bridge construction and maintenance have increased from $2,550,000 to $53,492,000, or almost 2,000 per cent.

CLEANING ALUMINUM.

Cooking Utensils Require Special Treatment—Some Scouring Materials and Alkalis Injurious.

The home economics experts of the department have studied the cleaning of aluminum ware as a part of their work on household equipment.

Unless a kettle is very badly discolored it is best to clean it by scouring. An aluminum utensil which is given proper daily care probably will not become so stained as to need cleaning by other methods. The kettle should first be freed from all adhering food and washed in hot water with a mild soap. Scraping should be done with a wooden spoon, since aluminum is a soft metal and easily scratched. The scouring preparation chosen should not contain hard, sharp particles of grit which would scratch the aluminum. The grit should either be very fine or else should consist of rounded grains. Those who live near the ocean can obtain sea sand for scouring, others may be able to purchase it, for it is sold in many stores. This has rounded grains which clean effectively without scratching. A moist, soapy cloth is dipped into the sea sand and rubbed on the metal. Care should be taken not to allow the sand to run down the sink drain, since it may result in clogging the pipes. Steel wool is also useful for scouring and may be purchased at most hardware stores. A small pad of the material is rubbed on a neutral soap and applied to the aluminum. Only a very fine grade should be employed, since the coarse is liable to scratch. A mixture of equal parts, by volume, of powdered whiting and alcohol, with the addition of a few drops of ammonia, is sometimes used for polishing aluminum which is not very badly discolored.

Commercial scouring pastes and powders containing soap and gritty material are on the market and are in many cases satisfactory. Scouring soaps which come in cakes are also effective, but less convenient to use because of the time and strength consumed in rubbing off enough from the cake upon the scouring cloth.

In cleaning aluminum strong alkali should never be used since it attacks and dissolves the metal. Such household alkalis as washing soda, potash, lye, or even strongly alkaline soap, should be avoided.

The action of acids on aluminum, such as dilute vinegar, fruit juice, or sour milk, on the other hand, is comparatively slight, although it is appreciable and may result in pitting the surface of the metal if long continued. The action of acids is taken advantage of in cleaning aluminum ware. No acid which is poisonous has a place in the kitchen and nothing of the sort should be used for cleaning aluminum. There are, however, a number of acid solutions available, especially those occurring in many fruits or vegetables, such as rhubarb, apples, or tomatoes. If rhubarb, either fresh or canned, is used, one or two stalks cut in small pieces are added to each quart of water and boiled in the discolored kettle until it is clean. The rhubarb or other fruit so used must, of course, be thrown away. After a kettle has been cleaned in this way it should be polished to remove any adhering particles of metal or metallic compounds, and to secure a bright, smooth surface, for this is less easily attacked chemically and so stains less readily than a rough one. The housekeeper who has access to the larger markets can usually buy rhubarb in winter as well as summer, but she, as well as housekeepers not living near large markets, may find it a convenience to can rhubarb especially for this purpose. It is well known that rhubarb stalks, whole or cut in small pieces, will keep well if washed thoroughly, put in sterilized jars, covered with cooled freshly boiled water, and sealed tightly at once.

From the data reported in chemical literature on the subject it does not appear that foods, when cooked in aluminum ware under ordinary household conditions, dissolve any considerable amount of the metal. There is no reason to suppose that aluminum as it might possibly thus occur in food so cooked would prove harmful.

JAPANESE QUINCE JELLY.

How to Use Fruit of Ornamental Shrub, Alone and with Other Fruits.

Under favorable conditions the Japanese quince,[1] which is much planted as an ornamental shrub, bears a crop of fruit something like an ordinary quince in appearance, though smaller on an average. Some housekeepers use these quinces for jelly making, but by the majority they have been regarded as of no value. In the opinion of the home economics experts of the department, they are well worth using, alone and combined with other fruits. Japanese quince jelly is of a light-yellowish color, with a delicate, quincelike aroma, and is more acid than ordinary quince, and for this reason is particularly good to serve with roast meats.

In making the jelly, wash the Japanese quinces, cut them into small pieces, cover with water, cook for one-half hour, and strain off the juice through a jelly bag. To each pint of juice add three-fourths pound of sugar, and cook until a trial shows that it will jelly. In making this as well as other jellies, it is worth while to cover the pulp with water and make a second extraction (to be combined with the first), as by no means all of the flavor and jelly-making qualities are removed by the first extraction.

If equal parts of apple and quince are used, a good jelly can be obtained, and also from equal parts of cranberry and quince. When grapes (Concords, for instance) are used, 1 part of grape juice to 3 parts of extracted quince juice is a good proportion. In such a combination the special, aromatic flavor of the quince is easily masked by the more full-flavored grape, but in all combinations the quince adds to the acid flavor, which is commonly an advantage.

If one is fond of old-fashioned marmalades or "fruit cheeses," the pulp extracted in making Japanese quince jelly can be rubbed through a sieve, mixed with sugar in the proportion of three-fourths pound to 1 pound of pulp, and cooked until it is very thick, taking great care not to burn it. This can be put in jelly glasses and is useful as a filler for layer cakes, for making sandwiches, and for other such purposes.

The Chinese quince [2] which thrives as an ornamental in the southern United States and is known as "quincedonia," bears a much larger fruit than the Japanese quince. This is also characterized by an acid flavor and a pleasant, pungent aroma. It has some local use for jelly making, and the tests made with it at the department have given good results. Equal parts of Chinese quince and apple have proved satisfactory both for jelly and for marmalade or "fruit cheese." The keeping qualities of these products were excellent.

It was an old-time custom to put quince fruits (usually dried in the sun) in a drawer to scent linen, and Japanese quince fruits can be used in the same way. If the quinces are not dried, they should be put in a wide-mouth open bottle or fruit jar, so that they will not come in contact with the linen and should be watched and removed at once if they begin to mold or rot.

Bonds sold for county highway improvement, in the opinion of road specialists of the department, should never run for more than 30 years, and retirement even earlier is better where this can be accomplished without too great an increase in the tax rate. It is dangerous practice to have bonds run for a long period, because in such cases the indebtedness often outlives the estimated life of the improvements made with the money so raised. Money borrowed to build roads should be repaid by those who enjoy the benefit of the improvements thus financed, and not be a debt upon those who gain no benefit from the expenditure.

[1] Botanical name: *Chænomeles japonica.*

[2] *Chænomeles sinensis* is the red-flowered and *C. cathayensis* the light-pink or the white-flowered sort.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1919

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., DECEMBER 6, 1916. No. 18

INCREASE CROP YIELDS.

States Relations Service Shows Progress and Accomplishments of Extension Work in South.

Fields farmed as demonstrations in agriculture under the supervision of county agents of the Office of Extension Work, South, returned in 1915 as a rule yields 100 per cent in excess of the average for the section, according to the annual report of the States Relations Service issued by the department. The demonstration work, it is stated, resulted in the widespread adoption of better methods, particularly in the preparation of land, selection of seed, and cultivation of crops.

During the year 1915, 731 regular county agents, 407 women county agents, and 26 special boys' club agents were engaged in the southern extension work. They carried on work with 110,000 adult farmers, approximately 63,000 boys, nearly 7,000 women, and about 33,000 girls. In 1916 these figures have been increased to 110,000 farmers, 63,000 boys, 48,000 girls, and 30,000 women.

During the year the office perfected its organization through the State colleges of agriculture for demonstration work among negroes, and on July 1 had 51 men and 5 women negro agents at work in 11 States. While the white agents have from the beginning assisted the negro farmers and tenants, it was found advisable in some counties where there is a large negro population to appoint a negro agent to work entirely with negroes. Frequently the Federal funds allotted for negro agent work are supplemented by local funds subscribed by the negro population. In some States a negro district agent supervises the work of the local negro agent. There is a close cooperation between the negro agents and the negro schools, negro agricultural colleges, and other institutions of the State working along the same lines. These agents are instructing and helping thousands of negro landowners and tenants, the plan of work being very similar to that of the white agents. Special stress is placed upon the production of home supplies for the family and stock, and upon the improvement of sanitary and home conditions. Negro children are also receiving instructions, as is partially evidenced by the enrollment of 2,800 members in what are called farm-makers' clubs, the members of which are taught to crop crops, can and preserve fruits and vegetables, and perform other services intended to be helpful to them and to the community.

In addition to its regular activities, the Office of Extension Work, South, carried on during the year several special campaigns, wherever it was deemed advisable, in hog-cholera control, tick eradication, and boll-weevil control work. The office made progress in its work seeking to make permanent the changes of the past few years for greater diversification.

As evidence of this progress in diversification, it might be stated that in the eleven Southern States usually known as the "Cotton belt," from 1909 to 1916, inclusive, the acreage in cotton increased 15.7 per cent, the acreage in corn 22.2 per cent, the acreage in wheat 152.4 per cent, the acreage in oats 84.2 per cent, and the acreage in hay 39.5 per cent.

Some of the specific accomplishments of the demonstration work during the year were:

Demonstrations of various kinds were carried on covering nearly a million and a half acres of field crops, and more than two million fruit trees. Instruction was given to approximately 29,000 farmers in the care of manure, resulting in the saving of over 3,300,000 tons.

Four thousand five hundred and eighty-four silos and 1,579 dipping vats were built.

Six hundred and seventy-eight cooperative organizations were formed to purchase fertilizers, and effected a saving to the communities of more than $125,000. And more than 1,700 community organizations of farmers were brought into existence through efforts of county agents.

Interest was aroused in live-stock production and resulted in bringing into the territory 1,776 pure-bred horses and mares, 8,639 pure-bred and high-grade dairy cattle, 12,560 pure-bred and high-grade beef cattle, 17,739 pure-bred hogs, and 9,568 pure-bred and high-grade sheep and goats.

More than 1,700,000 head of live stock were treated for various diseases and pests.

Boy-club members made an average production of 51.37 bushels of corn per acre.

Girl-club members put up 2,166,515 cans of fruits and vegetables, estimated to be worth $300,000, making an average net profit per member of $24.

Numerous labor-saving devices were introduced in farm homes, egg circles and cooperative poultry associations were organized, a large number of women's community clubs were formed, and many other lines of work were carried on.

BIRD PROTECTION.

Number of Birds About Farms and Suburban Homes Can Be Increased by Furnishing Food and Shelter.

The 1915 bird count based on 315 reports from different sections received by the Biological Survey shows that the average bird population on the farms of the United States can be largely increased by protection in furnishing food and shelter.

Several instances of a numerous bird population following well-directed efforts for its increase are reported. A farm of 65 acres near Westerville, Ohio, comprising plowed land 23 acres, hay land 22 acres, pasture 5 acres, orchard 5 acres, house and garden plot 2 acres, and swamp and wooded creek borders 8 acres, showed a population of 110 pairs of native birds and 25 pairs of English sparrows, or about double the average for the State. A farm of 78 acres near Strasburg, Ohio, with about the same proportion of the different fields, had 126 pairs of native birds and 8 pairs of English sparrows, also about double the average. A farm of 40 acres near Middletown, Conn., containing 10 acres of plowed land, 3 acres of woodland, 5 acres of pasture, 12 acres of orchard, and 20 acres of meadow, had a bird population of 165 pairs of native birds, 8 pairs of English sparrows, and 15 pairs of starlings; a total of 188 pairs, or more than four times the average. A farm of 40 acres at New Hope, Pa., called "The Hedges," from its numerous osage orange hedges, and divided into plowed land 15 acres, woodland 2 acres, orchard 5 acres, and grassland 18 acres, supported a bird population of 136 pairs of native birds, 17 of English sparrows, and 1 starling; a total of about four times the average.

These examples are all of farms that are used for ordinary farming purposes, and where no attempt has been made to attract an extra number of birds by winter feeding or by putting up nesting boxes. The large bird population is due solely to absolute protection and to leaving abundant chances for favorable nesting sites.

Eight acres of land at Olney, Ill., devoted to birds, planted with shrubbery that supplies food and shelter, equipped with nesting boxes, and made very attractive by an abundant supply of food and water throughout the year, became the home of 70 pairs of native birds of 31 species. The experi-

menter who conducted this refuge had some difficulty with certain kinds of birds. A single pair of red-headed woodpeckers were selfish and aggressive and prevented any other woodpeckers from nesting in the boxes. The house wren was equally tyrannical and prevented several pairs of chickadees and tufted titmice from occupying vacant boxes. The blue jays and grackles, however, proved the most troublesome. The blue jays destroyed fully 90 per cent of the eggs in the first-built nests and killed and devoured half-grown young of the mourning dove. It became necessary to "discourage" some 15 pairs of grackles and 50 pairs of blue jays before the smaller birds had a fair chance of existence.

The Survey's observations on the grounds of the department in Washington seem to confirm this experience, as grackles have been known to feed upon newly hatched English sparrows. Fish crows, on the other hand, attacked the young of grackles and even to a greater extent the nestlings of English sparrows.

Attracting Birds Under Suburban Conditions.

The owner of a summer home in Maryland a few miles from Washington, however, did not have the same trouble with house wrens. As a result of several years' endeavors, he has a colony of house wrens which in 1915 numbered 19 pairs, all in boxes put up for them in the immediate neighborhood of the house, and yet other birds also were numerous, and in the 5 acres surrounding the house there nested in 1915 a total of 24 species and 135 pairs.

The report of the 1914 bird counts credited Chevy Chase, Md., as having the highest record for that year. This same area in 1915 showed a satisfactory increase in the number of nesting birds, the total being reported as 40 species and 189 pairs on 23 acres. A half-acre lot in this area was the home during 1915 of 20 pairs of birds representing 14 different species, 4 wood thrush nests being the greatest number of any one kind.

A few miles from Indianapolis, Ind., is a tract of 44 acres known as Wooden's Garden, set aside in 1897 as a bird sanctuary, one of the first, if not the first, of the kind in the United States. In 1909 this was deeded to the city of Indianapolis to be maintained perpetually as a public park where bird life should be carefully protected. It consists of 12 acres of cleared and cultivated land and the remainder of heavily wooded hills and ravines. The 1915 counts showed that 62 different kinds of birds, represented by 193 nesting pairs, had their homes in this area.

In Aiken, S. C., the owners of two city blocks, 10 acres in all, for many years liberally supplied the birds with food and water. In the summer of 1915 the counts showed 10 species and 65 nesting pairs on this area. These consisted of the following species: Blue jay, 14; red-headed woodpecker, 11; mocking bird, 9; brown thrasher, 8; catbird, 7; cardinal, 6; wood thrush, 4; orchard oriole, 1; chewink, 1; English sparrow, 4.

Two of the reports received, one from Woodstock, Vt., and the other from Viresco, Va., gave interesting data as to variations in bird life from year to year.

The Woodstock tract contains 92 acres, 20 of which are in woodland, the balance devoted to pasture and usual crops.

The conditions on the farm have scarcely changed during the eight years and the bird life has not much altered—84 pairs of birds in 1915 as compared with 87 pairs in 1908—but it is interesting to note the wide variation in both kinds and numbers of each registered in the annual counts.

The total number of species nesting on the place in the eight years aggregates 49, while the highest number in any one year is 44 and the lowest 35, a range of from 90 per cent to 72 per cent of the total. The average number of nesting pairs per year is 82, with variations from 77 to 87, or an average variation of 3 per cent and a maximum variation of only 6 per cent. These variations have been attributed chiefly to the depredations of hawks.

The tract at Viresco, Va., contains 50 acres, consisting of woodland, 21 acres; plowed land, 5 acres; permanent pasture, 15 acres; and the remainder, 9 acres, brushy land along a stream and on a hillside. In 1907 much of the land not in woods had lately ceased to be cultivated and was growing up in brush, while the underbrush had just been thoroughly cleared out of all the woods. In the last eight years the underbrush has worked back into the woods, while a great increase has taken place in the brush and young trees along the stream and on some 3 acres that were formerly cultivated. During all the years bird life has been rigorously protected, but there has been no extra bird feeding either winter or summer and no putting up of bird boxes, with the exception of a single small martin house; this, however, was scorned by the martins, which are on several neighboring farms, but was used fitfully by bluebirds, house wrens, and crested flycatchers.

A bird count was made by an ornithologist in each of the last five years, and the results show a steady and pronounced gain in the number of kinds of birds nesting about the place, and a still greater gain in the total number of nesting pairs. Indeed, the gain in this latter respect, 69 per cent in the five years, is more than may be explained by the growth of bird food and shelter on the place and is probably due to the entire freedom from disturbance which the birds have come to recognize.

It is interesting to note the change in the character of the bird population from year to year. While 42 kinds of birds nested on the place in the course of the five years, the greatest number in any one year was only 34, while each year a dozen or more kinds of birds nested within sight of the 50 acres, but not within the enumeration area itself.

These examples show bird lovers what surprisingly satisfactory results may follow persistent and intelligent efforts to attract birds.

LIVING COSTS ON FARM.

Value of Food, Fuel, and Use of House for Average Farm Family.

Many a farm is yielding at least a small profit, when, according to a strict bookkeeping tally, it seems to be a losing proposition. This paradox is explained by the facts brought out in a bulletin just issued by the department, entitled "Value to Farm Families of Food, Fuel, and Use of House." These items, namely, food, fuel, and shelter, which every farm furnishes to the farm family without money cost, are the factors which strict bookkeeping does not take into account and which constitute the difference between profit and loss on the farm which seems to be losing money when in reality it is breaking even or perhaps making a little profit.

The facts brought out in this bulletin were gathered by a survey of a thousand families representing widely separated sections in 14 States. Figures were gathered covering the value of all food, fuel, and shelter, itemized to show what part was bought and what part furnished by the farm.

Following is a brief summary of the more significant averages established by this inquiry. The figures given are based on reports from 950 families, averaging 4.8 persons per family.

Annual value of food, fuel, and use of house:		
Average per family		$642.00
Furnished by farm	$424	
Bought	218	
Annual value of food:		
Average per family		448.00
Animal products (per cent)	58	
Groceries (per cent)	25	
Vegetables (per cent)	11	
Fruits (per cent)	6	
From farm (per cent)	58	
Bought (per cent)	42	
Annual value of fuel:		
Average per family		62.00
Wood (9.4 cords)	$36.32	
Cobs	1.00	
Coal (2.6 tons)	17.85	
Oil (55 gallons)	6.33	
From farm (per cent)	54	
Bought (per cent)	46	
Annual value of use of house:		
Average per family		132.00

It was found that the average annual value of meats consumed per family (other than poultry) was $107.25; of poultry products, $55.40; and of dairy products, $98.36.

The quantity of dairy products consumed per family was equal to 2,640 quarts of milk.

The total value of food consumed per family was found to vary directly with the amount of meat used. As the relative value of meat consumed increases, the total value of food consumed per family increases.

Families living on their own farms reported higher consumption of food and a larger percentage of food derived directly from the farm than of those living on rented farms.

The average quantity of fruit canned annually per family was found to be 122 quarts; of vegetables, 32 quarts.

DEVELOPING INITIATIVE.

Boy and Girl Members of Agricultural Clubs Master Physical Difficulties and Solve Business Problems.

How the initiative of boys and girls in all sections of the country is being developed through the juvenile agricultural club work fostered by the department, in cooperation with the State agricultural colleges, and how interest in the work is spreading among adults as well as children, is brought out by reports received by the States Relations Service of the department.

Three schoolboys in the State of Washington who were given the use of an acre of land for five years in return for clearing it not only made a profit from a potato crop the first year, but with the logs from the clearing built a substantial clubhouse on the school grounds and furnished it. School luncheons are now served in this building by girl club members.

Four girls in another portion of the same State, having only rocky land available on which to grow their gardens, removed four wagonloads of stones and now have thriving plats.

From both West Virginia and Idaho come reports of the development of business ability in young boys. In West Virginia a small boy began operations with one hen. With the proceeds from the sale of chickens raised he bought a pig. After fattening the pig he sold it and bought a calf, which he raised to a cow. With the proceeds from the sale of the cow the boy has taken up the regular business of cattle raising on a small scale. In Idaho a young club member, through raising a few pigs and calves, obtained enough capital to engage in the regular business of buying and selling hides.

Girl club members in the State of Washington have shown their business ability by taking orders from near-by lumber camps to furnish canned goods from their home-canning club supply.

The civic value of the club work has recently been recognized by the mayor of Glenwood Springs, Colo., who gave free water for irrigating garden plats on vacant city lots. In Wyoming a woman serving without compensation as local leader in club work rode 210 miles on horseback to receive additional instruction in the methods of club leadership for girls.

In the Southern States, where this work has been in progress for several years, hundreds of girls have made their own money to buy canning outfits, with which they can not only their own products but they also can for their neighbors on shares. Fully as many boys have saved enough from their crops to buy pigs, calves, colts, lambs, and chickens and are now prospering in the livestock business. Many students are taking agriculture and home economics in the colleges because of their own activity and thrift as members of these clubs.

CROPPING PLAN FOR POULTRY.

Green food for poultry may be provided throughout the year in a large portion of the country by using two yards alternately; that is, a crop is pastured in one yard while another crop is growing in the second yard. The following plan is suggested by specialists of the department, as adapted to moderate climatic conditions. The crop grown should be the one best suited to the particular locality. For the extreme North or South the dates should be modified. Thickly sown crops furnish succulent food and summer shade.

April 1 to July 1.

Growing (yard 1):	Feeding (yard 2):
Oats.	Winter rye.
Chard or lettuce.	Winter vetch.
Clover or vetch.	Crimson clover (New Jersey and South).
Sunflowers (shade and seed).	Sweet clover.
Cowpeas.	
Rape.	

July 1 to October 1.

Feeding (yard 1):	Growing (yard 2):
Oats.	Buckwheat.
Chard and lettuce.	Dwarf Essex rape.
Clover or vetch.	Flat turnips.
Cowpeas.	
Rape.	

October 1 to April 1.

Growing (yard 1):	Feeding (yard 2):
Oats.	Buckwheat.
Winter rye.	Dwarf Essex rape.
Winter vetch.	Flat turnips.
Sweet clover.	Soy beans.
Crimson clover.	

IMPORTED SEED SITUATION.

Only about one-half as much alfalfa seed was imported in 1915–16 as in either of the three previous years, and the imports of crimson-clover seed were less than half of those of the two previous years. Of hairy vetch seed less than 70,000 pounds were imported, as compared, with 2,500,000 pounds in 1914 and 500,000 pounds in 1915. The imports of both winter rape and red-clover seed exceeded those of any previous year, enough red clover seed being brought in to seed over 4,000,000 acres at a normal rate of seeding.

Owing to the unusual conditions in Europe the normal supply of winter rapeseed was unavailable and much other seed was imported under the name of rape. Seed purchased in the open market as winter rape showed that seed of seven other types of plants, all unsuitable for forage purposes, were being sold under this name. Tests of imported seeds have shown that large quantities of red and crimson clover seed brought into the United States germinated so poorly as to be of little or no agricultural value, and that much of the orchard grass seed contained but a small proportion of good seed, the balance being mostly chaff. The seed-importation act has now been amended, prohibiting the entry of such low-grade seed. Through the enforcement of the seed-importation act a large amount of low grade red clover seed offered for import into the United States has been recleaned and the screenings destroyed under customs supervision.

The seed situation led to an increase in the number of samples of seed submitted during the fiscal year 1916 to the department for test in its Washington seed laboratory and cooperative branch laboratories.

BETTER INSECT CONTROL.

Improved Methods of Combating Crop Pests Developed.

That poisoned baits properly modified in relation to local conditions afford a safe, cheap, and effective means of controlling grasshoppers throughout the country has been demonstrated by its experiments, says the Chief of the Bureau of Entomology of the department in his annual report just issued. The report cites conditions in the Connecticut and Merrimac valleys in New England where areas treated a year ago for destruction of grasshoppers are now practically free from infestation, whereas untreated areas in the same region are badly infested.

The bureau continued and extended its studies of insects injurious to vegetables and truck crops, bringing about the control of several pests through the propagation and liberation of natural enemies. In this way the spinach aphis, or plant louse, which was destructive in the tidewater region of Virginia for a decade of years, has been satisfactorily controlled by the introduction of lady beetles.

In its work of investigating the activities of insects affecting the health of animals, the bureau completed studies of a number of pests, including the newly introduced nose fly, which attacks horses. It was dem-

onstrated that while a fair degree of protection from the fly can be secured for work horses by the use of devices to exclude the flies from such horses' noses, the usual type of nose covering is not applicable to horses in pasture. Investigations are being made which it is hoped will lead to the development of adequate protectors for all purposes, and experiments also are being made with substances to repel the nose fly.

In the development of control measures for screw-worm flies, ox warbles, and other insects affecting the health of animals, the bureau also has made progress.

SOY BEAN A PROMISING CROP.

Notable progress has been made in bringing about the commercial utilization of soybean seed for the manufacture of oil, meal, and various more or less complex products, according to the annual report of the Chief of the Bureau of Plant Industry. The soy bean, the report states, is well adapted to the whole cotton belt, and indeed to the whole corn region. In the cotton belt it promises to be an important element wherever the acreage of cotton has been reduced. The immature bean seeds make a very delicious vegetable and are canned with ease. Inasmuch as soy beans can be more cheaply produced than any other bean seed, it is believed that there is a large field for the canning of green soy beans. Efforts are now being made to induce canning factories to put the product on the market. In the growing of the soy bean and in manufacturing products therefrom the United States can successfully compete with the Orient.

WITH THE COUNTY AGENTS.

With the assistance of the county agent a wool auction was held recently in Otsego County, N. Y. Wool clipped by 60 growers, amounting to 20,000 pounds, was sold to the highest bidder at a price of 39½ cents, which is an advance of 4½ cents per pound over the normal price in this county. Everything consigned was taken, down to a minimum of 35 pounds.

A bacteriological laboratory is to be established in connection with the farm bureau for the benefit of the milk producers of Franklin County, Mass.

A county agent in Utah reports that very little disease is showing up in fields planted with selected and treated seed potatoes, while some of the fields planted with untreated seed show as high as 75 per cent of diseased plants. In one of the best demonstration fields planted with selected and treated seed it took only 3 hills to fill a 12-quart pail, while under similar conditions, but where the field was planted with untreated and unselected seed it took 26 hills to fill the same sized pail.

In checking up to find how generally farmers, as a result of the county agent work, were treating their seed oats to guard against smut, a county agent in Indiana found that the sales of formalin by druggists of the county had increased from 120 pints during the spring of 1915 to 1,383 pints during the spring of 1916.

A county agent in Michigan has arranged for cooperation between the members of the farm bureau and the millers of the county in standardizing the wheat grown in the county. They have selected a variety having high milling qualities and will endeavor to have all the farmers of the county grow this one variety.

DEVELOPING HEMP PLANT.

Experiments to develop better varieties of hemp by continued selection of Minnesota No. 8 variety of hemp have resulted in marked improvement, according to the annual report of the Bureau of Plant Industry. Those in charge of the work started with a plant 10 feet 5 inches high. The tallest plant in 1914 was 13 feet 4 inches, and in 1915 the tallest plant was 16 feet 8 inches high. The entire plat in 1914 averaged 9 feet 11 inches total height, and 4 feet 5 inches to alternate branches. In 1915 the average in total height was 12 feet 8 inches and 5 feet 9 inches to alternate branches. The marked improvement in the plants, especially in the uniform type with long internodes, indicated by the increased height to alternate branches, warrants a distinctive name. It is called "Kymington," indicating Kentucky seed improved by selection in Minnesota and Washington.

COST OF BOARDING HIRED HELP.

It costs $128 per year to board a hired hand, according to estimates furnished to the Department of Agriculture by 1,000 farmers representing widely separated sections in 14 States. The averages derived from these estimates are embodied in Department Bulletin 410, recently published, entitled "Value to Farm Families of Food, Fuel, and Use of House."

It was found that the total annual cost per person of board for hired help varied from $104 in Vermont and Pennsylvania to $162 in New Jersey, and that the percentage of this cost paid out in cash varied from 15 per cent in North Carolina to 49 per cent in California. This percentage is about one-third in the eastern section studied, about one-fourth in the corn-belt States, and still less in the Southern States.

The total of hired help boarded varies considerably with variations in farming conditions. For example, among the families visited in New Jersey, hired help averaged 0.6 of a person per family, in Maine 0.4, in North Dakota 1.1, and in California 0.3. In other words, in New Jersey the average family boarded one man for 7 months, in Maine one man for 5 months, in North Dakota one man for 13 months, and in California one man for 4 months.

WARNING TO BUYERS OF BALED HAY.

The department is investigating the practice of some shippers of hay of veneering or facing the bales. Veneering consists in feeding to the baling machine an occasional forkful of hay that is of higher grade than the bulk of the lot being baled and manipulating the forkful in such a way that the high-grade hay covers the outside of the bale, making the bale appear to contain better hay than it actually does contain. The National Hay Association has requested the department to cooperate with it in trying to eliminate this practice, believed to be dishonest Buyers of baled hay are warned to be on the lookout for this practice in order to avoid accepting on a cursory examination a lower grade of hay than they intend to purchase.

The destruction of grasshopper eggs by fall plowing, disking, and harrowing is recommended when practicable.

Allowing animals to harvest corn saves the labor of cutting, husking, hauling to the feed lot, and hauling the manure back on the land.

Delicious table sirup can be made from cull and waste apples by home methods developed by the United States Department of Agriculture.

Limestone soils in general are particularly well suited to alfalfa, but even such lands are frequently acid and require liming to grow this crop successfully.

About 216,037 canaries, 7,080 partridges, 15,841 pheasants, 5,345 miscellaneous game birds, and 25,747 nongame birds were imported in 1914 under Federal permit.

During 1915 the total road and bridge expenditures in the United States amounted to about $282,000,000, of which probably not over $15,000,000 represented the value of the statute and convict labor.

While corn culture under droughty conditions is largely a matter of taking chances with seasonal conditions, certain controllable conditions of soil and seed often determine the success or failure of the crop.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., DECEMBER 13, 1916. No. 19

KEEP COW'S RECORD.

Value of Cow-Testing Associations Demonstrated—Appearance Often Deceptive in Dairy Cows.

That the appearance of a dairy cow can not be depended on to indicate her production of milk is illustrated by a demonstration conducted under the auspices of the Dairy Division of the department with a herd of nine cows at the National Dairy Show held recently at Springfield, Mass.

A year's record of milk and butter fat already had been made for all the cows of the herd. During the show complete records of production and feed consumption were kept and in every case the previous records were duplicated. Some of the cows were of poor dairy type, yet were good producers; others were of good dairy type, yet were poor producers; still others of similar appearance had greatly different records. Of the last-named class were Nos. 8 and 9. Many experienced stockmen selected No. 9 as the better of the two, but the records showed that for the last year No. 8 gave 8,445 pounds of milk and 346 of fat compared with 4,279 pounds of milk and 198 of fat for No. 9. This served as an object lesson to the hundreds of people who daily viewed the demonstration that good dairy type is not always associated with large production and that poor dairy type does not indicate lack of large yield.

"What does it cost to keep records?" was a common question of the dairymen. In cow-testing associations, where the above-quoted records were made, the charge is $1.50 a month for each cow, and in addition the board of the tester for one day each month. With feed, labor, and live stock so high, it certainly is imperative to eliminate every unnecessary expense like the "boarder" or "robber" cow that fails to pay for even her feed.

In the big room at the dairy show where the cows were stanchioned were several hundred comfortable seats. Here several times each day well-known dairymen from various parts of the country talked to the large audiences on dairy problems, illustrating their remarks with the cows of the demonstration herd. Especial emphasis was laid upon the value of records in economical management.

Cooperative bull associations were carefully described and their many advantages explained. That it was possible to have high-class bulls of the finest breeding for the use of a dairyman with only a few cows seemed to many farmers as too good to be true, especially when the cost was even less than in the case of scrub bulls. In this connection the charts that illustrated the conditions at Roland, Iowa, before and after the organization of a bull association, elicited much interest. At that place, for a yearly investment of $7.50 each, the members have the use of five $240 bulls for 10 years.

On the walls of the demonstration room were pictures of famous dairy animals, charts showing results of record keeping, etc. Adjoining were skeleton milk or dairy houses, with the sides only partially finished, to show the construction; also a model of a dairy barn and of a silo. In the milk houses was dairy equipment, and a man in charge answered questions on dairying and explained the construction of these and all other kinds of dairy buildings.

At regular periods demonstrations in the sterilization of milk utensils were given with the inexpensive farm sterilizer described in Farmers' Bulletin 748; these demonstrations were well attended.

There was also keen interest in every part of the demonstrations, as may be judged from the fact that about 5,000 people listened to lectures and fully 15,000 viewed the exhibits.

CONTROL CLOVER SICKNESS.

The results so far obtained in experiments in clover-sick regions, being carried on by the department in cooperation with the Indiana and Wisconsin experiment stations, indicate that in the cases investigated the incorporation of certain green manures, together with proper fertilizer treatment, accomplishes a control of this trouble.

Although birds of all families prey upon grasshoppers, the following may be selected as the most important destroyers of grasshoppers for their respective groups: Franklin's gull, bobwhite, prairie chicken, red-tailed, red-shouldered, broad-winged, and sparrow hawks, the screech and burrowing owls, yellow-billed cuckoo, road-runner, nighthawk, red-headed woodpecker, kingbird, horned lark, crow, magpie, red-winged and crow blackbirds, meadow lark, lark bunting, grasshopper and lark sparrows, butcher bird, wren, and robin.

COUNTY AGENT WORK.

Improvements in Farming Methods Due to Demonstration Work of States Relations Service.

Through development of improved organization and the growth of a more definite project system the Office of Extension Work in the North and West carried its demonstration activities into closer relation to the practical needs of the farmers of the region during the past year, according to the annual report of the States Relations Service of the department. Local associations of farmers took a greater part in the work and more attention was devoted to studies of local economic facts upon which to develop demonstrations of permanent value. Extension work in the special interests of farm women was undertaken in the territory under the office, and a number of women agents were placed in the field.

Among the specific results from the county-agent work of the Office of Extension Work in the North and West during the year were:

Yields of corn in fields managed as demonstrations under supervision of the county agents increased on an average 12.8 bushels per acre over the average yields for the region.

Yields of wheat in fields managed as demonstrations increased 8.4 bushels per acre.

Yields of oats in fields managed as demonstrations increased 11.7 bushels per acre.

Alfalfa was introduced on 11,311 farms.

Several score registered stallions and rams and several hundred registered bulls and boars were placed on farms.

Nearly a thousand fine bulls no longer useful in their communities because of danger of inbreeding were saved from the block and transferred to other communities.

One hundred and forty-three cow-testing associations, 90 live-stock breeding associations, and 142 hog cholera control associations were organized.

More than 200,000 hogs were vaccinated against cholera.

Better farm management was promoted through assistance given to farmers in determining the factors that make for success or failure in farm enterprises.

Farmers' exchanges and cooperative marketing associations were organized and effected large savings to members.

Three hundred and twenty-one water-supply systems were introduced into farm homes.

Club work was carried on with more than 209,000 boys and girls. Over 24,000 of these engaged in profit-making projects, producing over $509,000 worth of food products.

The club work was placed on a more permanent basis as an extension agency, and boys and girls are now enrolling to pursue the work for a series of years.

1915 BIRD COUNT.

Average Farm in Northeast Has 124 Pairs—125 Pairs on 100 Acres in Plains Region.

One hundred and twenty-four pairs of birds nest and raise their families on the average farm of 108 acres in the Northeastern States, according to estimates based upon the second annual bird count conducted by the Bureau of Biological Survey of the department. In that part of the plains regions east of the one-hundredth meridian the counts would indicate almost exactly the same density of bird population, 125 pairs of nesting birds to each 100 acres. In the Southern States, where the counts were limited to the part of the farm surrounding the home, which naturally supports more birds than the tilled areas, there seem to be on the farms where counts were taken 131 pairs of nesting birds to each 100 acres. The counts so far received, however, from these sections do not furnish a sufficient basis for estimating the birds on the remainder of the farm.

In the Northeastern States it was estimated that the average bird population of each 100 acres of isolated woodland under observation was 199 pairs, while the average bird population for each 100 acres of the area covered was 125 pairs. The reports from the Rocky Mountain States would indicate that the bird population is smaller in this section.

Three 80-acre tracts in New Mexico indicated 17 pairs to 80 acres or 21 pairs to each 100 acres. In the irrigated district of western Colorado two reports indicated that irrigated land in orchard and in fields of grain and root crops supported a bird population of 66 pairs per 100 acres, but on contiguous nonirrigated land the bird life shrank to 5 pairs for 100 acres. In Arizona a 40-acre tract containing only a few houses, and for the most part covered with desert shrubs, showed a bird population of 50 pairs of 26 species, of which 22 were insectivorous. A semidesert tract of the same size, covered with brush mostly less than 6 feet high, showed 31 pairs of 16 species. In the mountains of Arizona, near Flagstaff, a tract of 70 acres covered with yellow pine and Gambel oak supported a bird population of 31 pairs of 18 species.

In California 20 acres of the campus of the University of California showed 87 pairs of 23 species. A tract near Gilroy, Cal., containing 30 acres of fruits and about 8 acres of pasture and creek bottom, gave the unusual figure of 176 pairs of 34 species on 38 acres. A similarly dense, though less varied, bird population was found in a 52-acre peach orchard near Port Clinton, Ohio. This showed 108 pairs of common farm birds, 36 pairs of purple martins, and 6 pairs of English sparrows, a total of 150 pairs of 29 species.

In the South the counts showed an average of 77 pairs of 20 species and 5 pairs of English sparrows on 83 acres in Florida; in Louisiana an average of 95 pairs of 29 species on 53 acres; and the counts from Texas indicate an average of 91 pairs of birds of 21 species on 60 acres. The average of all counts received from the Southern States is 76 pairs of birds of 23 species on a farm of 58 acres.

On the 256 acres on the Cornell University campus at Ithaca, N. Y., a very careful study indicated 573 pairs of nesting birds, an average of 166 pairs of native nesting birds per 100 acres, and 56 nesting pairs of English sparrows per 100 acres, or a total of 225 nesting birds per 100 acres. A similar count made near Rhinebeck, N. Y., in a 210-acre section indicated 54 different kinds represented by 366 pairs, nearly the same per acre as shown at Cornell University.

The results of the 1915 bird count just published by the Biological Survey indicate an average of 8 pairs of robins and 6 pairs of English sparrows on each farm of 108 acres where the count was made in the Northeastern States. The average of all reports for two years shows 7 pairs of robins and 5½ pairs of English sparrows for each farm covered in this section.

SUGAR-BEET SEED.

Satisfactory Crop Last Year Results in Largely Increased Planting.

Sugar-beet seed was grown commercially in this country during the past year in several States from Michigan to California. The crop of seed harvested in 1915 was so satisfactory, according to the report of the Chief of the Bureau of Plant Industry of the department, in each of the areas tested that a largely increased acreage was planted this year.

This bureau has assisted in an advisory way in growing, selecting, and siloing the roots, planting them in the spring, harvesting and cleaning the seed, and, in general, endeavored to produce the largest amount of commercial seed possible at a minimum cost. Approximately 5,000 acres are in beet seed in this country this year, while we require the product of at least 16,000 acres for a normal planting, not considering the natural expansion of the beet-sugar industry. Each new mill will require an average of 200 acres in seed to meet its planting requirements. Seven new mills are in process of construction for this year.

The problem of drying the sugar beets for the purpose of increasing the amount of raw material for the mill and thereby increasing the length of the sugar campaign has been further investigated. The principal difficulty has been in finding or devising a dryer of suitable capacity to handle enough beets per day to be profitable. A satisfactory solution of the problem will be very beneficial in those small valleys in the intermountain States, where the acreage is not sufficient to support a sugar mill, and yet the sugar beet is necessary to the highest results in the farming operations.

BUTTER HONORS.

Premier honors for butter were won at the last National Dairy Show, Springfield, Mass., by the creamery at Grove City, Pa., operated under the supervision and direction of the Dairy Division of the Bureau of Animal Industry.

Twenty-seven States and the Dominion of Canada were represented in the 151 samples entered. All the entries were of high quality, but in the opinion of the judge the 10-pound tub from Grove City was the best, with a score of 96. The award is the more interesting because the creamery had been in operation only a little more than a year.

Only fresh, sweet cream and whole milk of good flavor are accepted by the creamery and are carefully handled under sanitary conditions. All cream is pasteurized and then ripened with lactic-acid cultures. The high quality of the product may rightly be attributed to a good raw product and proper methods of manufacture.

AGRICULTURAL CLUB ACTIVITIES.

Although no special efforts have been made to increase the membership of boys' and girls' agricultural clubs in the Northern and Western States, reports to the States Relations Service of the department, which, with the State agricultural colleges, directs the work, show that the enrollment on June 30 last was 180,082 as compared with 151,194 on June 30, 1915. This indicates that there should be a material increase in the final enrollment for the year over the enrollment for 1915, which was 209,178. The club groups organized show an increase of 404 clubs over the number reported last year. During the six months ended June 30 this year approximately $73,000 had been donated by local persons for local fairs, festivals, and for other methods for the encouragement of the local work as compared with $51,176 during the entire calendar year of 1915.

RURAL ENGINEERING.

Experimental, Post, and County Roads Constructed—Homes and Other Farm Buildings Designed.

Nearly 5,000,000 square yards of roadway, the equivalent of 561.9 miles of road 15 feet wide, were constructed under the supervision of Federal road specialists during the last fiscal year, according to the annual report of the Office of Public Roads and Rural Engineering of the department just issued. This is more than double the mileage so constructed in previous years. The roads constructed under supervision of the office include experimental roads, post roads, county roads, and roads in national parks and forests. The expenditures of the office for this purpose were chiefly for engineering services and supervision, the communities, except in the case of forest and park roads, meeting the bulk of the costs for material and construction.

A special appropriation was made for the construction of the post roads in the post-office appropriation bill of 1912. Eight of the 11 post road projects remaining at the beginning of the last fiscal year were completed by the end of the year, bringing the mileage of the completed roads under this special project to 397.6. Three of the original 17 projects, aggregating 59.17 miles in length, remained uncompleted at the end of the year. The 8 projects completed are in 7 States and traverse 15 counties.

The office made studies and recommendations for improving the complete road systems of 32 counties in a number of States, assigned engineers to inspect specific roads and advise as to their treatment in 113 communities, and especially assigned 7 engineers to assist State departments of roads and other State agencies dealing with roads and road materials.

Maintenance Work.

The demonstration maintenance work undertaken in 1914 on a through route from Washington to Atlanta was continued during the year, the mileage under supervision increasing from 724 to 876. The cumulative effect of continuous maintenance, says the report, has been demonstrated by the fact that from March 15 to the end of the fiscal year, June 30, 1916, the road was not closed to traffic at any point.

National Park and Forest Roads.

In the national parks and national forests the office supervised construction on approximately 170 miles of road, of which about 70 miles were completed. One of the roads under construction—the Escalante-Winder road in the Powell National Forest, Utah—will open up communication with a settlement in the valley of the upper Colorado River which has heretofore been practically cut off from the rest of the world.

The economic work of gathering road statistics and making studies of traffic, road costs, and benefits was continued by the office. Numerous tests and much research work in regard to road materials were conducted.

The office carried on a number of investigations in regard to irrigation in cooperation with States, agricultural experiment stations, and other agencies, chiefly in the West. Drainage investigations were conducted both in the irrigated and humid regions.

Rural Engineering.

In its rural engineering work the office planned farm water-supply systems and sanitary systems, and prepared plans for a southern farmhouse, three farmhouses suited to northern conditions, barns, corncribs, stables, machinery sheds, etc. The office also furnished information in regard to electric lighting and power plants for farm refrigerating systems, heating plants, windmill installations, etc.

IMPORTED HIDES.

New Rules, Effective January 1, 1917, Governing Disinfection.

New and simplified regulations governing the disinfection and importation of hides, based on investigations in recent years, have been promulgated by joint action of the United States Treasury Department and the Department of Agriculture, to become effective January 1, 1917. Under these regulations the most stringent requirements are those for the exclusion of anthrax. The other diseases against which safeguards are established are foot-and-mouth disease and rinderpest.

Principal Changes.

The principal changes in the regulations are:

Regulations are printed for the first time governing disinfection and admission of hair, wool, bones, horns, and hoofs.

Hides from countries not shown by United States consular agents or official veterinary or sanitary inspectors of the countries to be free from anthrax, if such hides are to be admitted on certificate, must be certified to have been immersed in a 1 to 1,000 bichlorid of mercury solution for 24 hours instead of 30 minutes, as under present regulations.

Hides in bales unaccompanied by certificate of freedom from anthrax, rinderpest, or foot-and-mouth disease, or by certificate of disinfection, will be admitted if such bales have been whitewashed under United States consular supervision and the importer agrees to ship them in customs-sealed cars to a tannery provided with adequate facilities for disinfection, and to disinfect them in accordance with requirements of the Bureau of Animal Industry of the United States Department of Agriculture under supervision of an agent of that bureau.

Sun-dried hides from countries certified to be free from anthrax will be admitted without disinfection.

IMPROVING POTATOES.

New Varieties Developed by Department—Experiments in Control of Diseases.

The department is conducting a number of potato investigations, chiefly at Presque Isle, Me.; Greeley, Colo.; Jerome, Idaho; and Norfolk, Va. One of the main features of the work is the development, from seed, of new varieties of potatoes specially suited for certain purposes and adapted to the special growing regions in which such products can most economically be produced. A large number of seedlings have been grown and those of greatest promise only retained, of which there are some 300 considered of sufficient value to warrant further testing. These are being tried out in cooperation with the various State stations, and as soon as they have proven their worth in any locality arrangements will be made to establish the variety in the region to which it is best adapted.

Experiments leading to a determination of the factors necessary for the production of disease-free potatoes in western irrigated sections have shown that organisms capable of causing diseases of potatoes are probably present in all desert lands, but that land previously in cultivation with grains and alfalfa may, when disease-free seed is planted, produce a crop comparatively free from disease. In southern Idaho the experiments on the control of powdery dry rot in storage have been completed and show that the losses can be prevented by careful harvesting to avoid mechanical injuries and by keeping the storage cellar at a temperature between 35° and 40° F., with proper ventilation. When it is necessary to store in poorly ventilated or improperly cooled houses the disease may be effectively checked by disinfection with corrosive sublimate or formaldehyde, provided this is done within 24 hours after digging. Further surveys have indicated that the powdery scab disease is confined to six sections of the United States, all of these being northern except one locality in Florida. In every case these areas are in sections with considerable rainfall, where soil conditions are such that poor drainage prevails. It has been found that the disease can be lessened

by the application of seed and soil treatments. The cause of potato "leak," a rapid type of decay causing serious loss in the Delta district of California, has been discovered and experiments have shown that it can be controlled by careful harvesting and sorting before shipment.—Annual Report Chief of Bureau of Plant Industry.

WAR ON NOXIOUS ANIMALS.

Hunters Employed to Destroy Rabid Coyotes—Rodents Poisoned.

Depredations of predatory animals accompanied by outbreaks of rabies among them in parts of Oregon, California, Nevada, Idaho, and Utah resulted in the shooting, trapping, and poisoning of over 11,000 coyotes during the last fiscal year by hunters in the employ of the Biological Survey of the department. Altogether over 15,000 noxious animals, including wolves, coyotes, mountain lions, and bobcats were destroyed. The seriousness of the outbreaks of rabies will be realized when it is stated that more than 60 persons were treated by State authorities of Nevada during the year on account of having been bitten by either wild or domestic animals. The loss of live stock has been very heavy. At Winnemucca, Nev., a single rabid coyote caused the loss of 27 steers.

During the past year over 250,000 acres of Government and public lands have been covered with poisoned grain for the extermination of ground squirrels. Large areas of private agricultural land also have been cleared of these pests through campaigns conducted by the owners under the direction of representatives of the Biological Survey. Operations have been continued effectively against prairie dogs, and over 1,500,000 acres have been practically cleared of these destructive animals. Improvements which have been made by the bureau in methods of exterminating prairie dogs have encouraged large numbers of farmers to destroy them on their lands.

Effective methods of destroying jack rabbits have been devised and the depredations of these animals have been greatly reduced in many localities where they had proved exceedingly destructive. Similarly satisfactory results are being obtained in operations against gophers and moles.

Important experiments have also been conducted and methods devised for the control of seed-eating mammals which work havoc in tree plantations and areas which are being reforested.

Land Crabs in Florida.

Experiments to determine economic methods of controlling land crabs were conducted in the vicinity of Cocoanut Grove, Fla.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

These pests were estimated to have destroyed 60 per cent of the tomato plants of the locality, as well as quantities of other garden truck. They also damage coconut groves by their numerous burrows. It was found that the crabs could be exterminated by introducing 5 or 6 drops of carbon bisulphid into each burrow by means of a long-nozzled oil can and closing the opening by pressure of the foot.

PROMISING NEW FRUITS.

The behavior of a seedling Chinese litchi tree in California, which is now about 14 years old, and of inarched trees in Florida, now 7 years old, indicate that there are areas in Florida and California where this unusual fruit tree may be expected to live and bear if the young plants can be protected, or at least escape severe frosts until they become thoroughly established. The fruit produced by the experimental trees, according to the specialists of the department who have been working for its introduction, is excellent, and its appearance and shipping quality are certain to insure a ready sale on the fresh-fruit market. The fresh litchi is superior to the dried so-called litchi "nut," $300,000 worth of which are imported annually into this country.

VALUE OF HOUSEHOLD LABOR.

It takes $228 worth of house labor to keep going the domestic activities of the average American farmhouse if estimates furnished the department by a thousand housewives may be taken as a criterion. Each was asked what she would have to pay to get some one to do her work. Their estimates are averaged in Department Bulletin, 410, Value to Farm Families of Food, Fuel, and Use of House. They were gathered from representative areas in 14 States and may be taken as fairly accurate.

The total value of household labor per family varies from $138 in Georgia to $293 in California, and the percentage of labor hired varies from 1 per cent in Kansas, Wisconsin, Pennsylvania, and Vermont to 15 per cent in Georgia.

It was found that the question of obtaining suitable hired help is everywhere a very serious one to the housewife. The women of practically all the sections studied complained that domestic help is hard to get and often undesirable when secured.

The following table shows the average value of household labor per family and per person for the 14 States included in this study:

States.	Value of labor.		Percentage of labor hired.
	Per family.	Per person.	
Maine	$238	$53	3
Vermont	182	38	1
New York	221	56	3
Pennsylvania	214	41	1
New Jersey	294	63	9
North Carolina	152	34	5
Georgia	138	25	15
Texas	217	41	7
Ohio	197	49	3
Wisconsin	177	54	1
Iowa	270	64	3
Kansas	261	58	1
North Dakota	334	54	7
California	293	60	8
All families	228	49	5

BRIEF ITEMS.

The most practicable means of controlling grasshoppers is by the use of poisoned-bran baits or the modified Criddle mixture.

The golden plover of the Pacific ocean migrates from Alaska to the Hawaiian Islands. Its flight takes it 2,000 miles across an islandless sea.

The department, during the last fisca year, employed 634 people in cooperative work in the eradication and control of citrus canker in the Southern States.

It has been found that a few thorough applications of crude petroleum to the interior of poultry houses will destroy completely the common red mite infesting chickens.

The longest continuous flight of any bird is made by the golden plover. From Nova Scotia to the coast of South America the entire flight of 2,400 miles is accomplished without pause or rest.

A device has been originated by specialists of the department which promises a more satisfactory and practical application of the hot-water treatment for the prevention of loose smut of wheat and barley.

Extensive researches by plant pathologists of the department upon the development of crown galls upon plants show that these galls, which are caused by a bacillus, have very many points of resemblance to human cancer.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1918

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., DECEMBER 20, 1916. No. 20

COTTON SEED SUPPLY.

High Prices at Oil Mills Tempt Farmers to Sell—Early-Maturing Long-Staple Varieties Should Be Saved for Planting.

The Bureau of Plant Industry, United States Department of Agriculture, has issued the following statement advising cotton growers to make certain of their supply of seed for planting:

All kinds of cotton seed are likely to be scare at planting time next spring. The unprecedented prices now being paid at the oil mills may tempt many farmers to cut down their reserves of planting seed or to sell all of it, perhaps with the idea of being able to buy seed of a better variety for only a little more than the mills are now paying for ordinary gin-run seed. While it is always desirable to replace an inferior stock with a better one, it would be well to make sure of the good planting seed as soon as possible.

Supplies of pure seed are always inadequate, and the department frequently has to tell many correspondents who ask where pure seed of superior varieties can be purchased that no more is in sight. Although special efforts are made to keep in touch with farmers who are maintaining pure stocks of any of the varieties that have been distributed by this department, all such stocks are usually exhausted before the planting season arrives.

Special Demand for Long-Staple Seed.

Another danger to the seed supply lies in the possibility that growers who have good seed of superior varieties may think it easier to sell it at once to the oil mill instead of holding it to sell for planting. This is a special danger in connection with the new early-maturing long-staple varieties. As only limited supplies of good seed of these varieties are in existence, it may be urged that all of this should be saved for planting purposes. There is an active and rapidly increasing demand for the longer staples, with no immediate prospect of overproduction. The present demand is likely to increase as fast as the supply, if the production of such cotton can be established on an adequate scale, so that manufacturers can have the same confidence in being able to secure stocks of long-staple cotton that they have with short staples.

At the present time the supply of long-staple cotton, especially that from $1\frac{3}{16}$ to $1\frac{1}{2}$ inches in length, *is much below the demand.* This fact is reflected in the large premiums now being paid for these extra staples. *Prices are now higher than at any time in the history of cotton production.*

New Areas of Long-Staple Production.

The new early-maturing long-staple varieties which are proving successful in meeting the boll-weevil conditions in the Delta region of Mississippi, Louisiana, and Arkansas are coming into cultivation outside this former center of long-staple production. Three other areas now offer especially promising prospects of an increased planting of these cottons—southeastern Virginia and adjacent regions of North Carolina, northern Mississippi, and western Tennessee, and the Red River Valley of northeastern Texas. While equally favorable conditions are probably to be found in other States, the experiments that have been carried on for several years in the districts mentioned have shown the practical possibilities of producing satisfactory crops of long-staple cotton in ordinary seasons. In each of these areas yields of more than a bale per acre have been obtained for several of the early long-staple varieties now being grown—Columbia, Foster, Express, and Durango.

New Early-Maturing Long-Staple Varieties.

The development by the Department of Agriculture of these early-maturing varieties has entirely changed the prospects of production of long-staple fiber in the American cotton belt, both inside and outside the areas infested by the boll weevil. The old long-staple varieties, such as Allen, Sunflower, Florodora, and numerous others, were often so late in maturing that they could not be considered a safe crop except in the more southern districts, and even there the yields frequently were very small. The chances of good crops were still further reduced when the weevils came, and most of the long-staple planters turned to short staples or abandoned cotton altogether.

The new long-staple varieties have no relation to the old ones. They were developed from different stocks and have distinct botanical characters and habits of growth. In their general appearance, size of bolls, and ability to mature in short seasons they are much more like the short-staple varieties. None of the agricultural drawbacks of the old long-staple varieties applies to these new

(*Continued on page 3.*)

71748°—16

SUMMARY OF REPORT.

Secretary of Agriculture Discusses Nation's Food Supply—Distribution and Marketing—Recommendations.

The food supply of the Nation is discussed by the Secretary of Agriculture in his annual report for the fiscal year ended June 30, 1916. The Secretary states it is notable that, with the exception of meat and dairy products, the per capita production of the leading food commodities, notwithstanding the increase in population, has remained approximately the same or has increased. It is gratifying to note, he adds, that the alarming decline in beef production reached its lowest point in 1913, and that since that time there has been a material increase, while there has been a marked advance in the number of swine since the census year 1899. The number of sheep has continued to decline, but only to a slight extent. The number of animals slaughtered and the quantity of meat products prepared under Government inspection during the past fiscal year are the largest in the history of the service. This heavier slaughtering has been accompanied by an increase in the remaining stock of animals. He points out that with all the agencies now available for improving agriculture there is ground for optimism as to the ability of the Nation not only to supply itself with food but increasingly to meet the needs of the world.

The Meat Supply.

The Secretary says that the activities of the department toward increasing the meat supply have taken two principal directions—(1) combating diseases, and (2) the development of stock raising. He indicates the progress which has been made in the campaign for the eradication of the southern cattle tick and in combating hog cholera, sheep and cattle scabies, and contagious abortion. He recommends the inauguration of a campaign against tuberculosis in cattle and hogs, stating that this disease is the most common, destructive, and widely disseminated of the infectious diseases of domestic animals and causes losses estimated at $25,000,000 a year in the United States.

The Secretary shows that the grazing capacity of the national forest ranges has been increased through systematic regulation by from 15 to 30 per cent, and states that

the adoption of a similar system of regulation on the 250 million acres of public grazing land outside the forests would permit a considerable addition to the country's meat supply. He says the investigations of the department have shown conclusively that the South is well adapted to economical beef and pork production and that the eradication of the cattle tick is opening up a large territory for this purpose. Progress also has been made in the destruction of rodents which lessen the grazing value of western stock ranges, and in killing predatory animals which cause losses to the live-stock industry estimated at $12,000,000 annually.

Sheep Raising.

The Secretary recommends that sheep be raised more extensively as a source of meat and wool and also as a means of using much of the waste land on farms. He points out that in the United States only one in seven farms of over 20 acres now supports sheep, with an average of one sheep of shearing age to 3 acres of land. The 300 million pounds of wool now imported annually, he says, could be secured from 50 million sheep, and this number could be added to our stock if a fourth of the remaining farms sustained one sheep for each 3 acres. The report also discusses the development which has taken place in the dairy industry and calls attention to the fact that cheese making, which heretofore has been limited to certain sections, can be extended successfully to the mountain regions of the South, to the valleys of the Rocky Mountains, and to many sections of the Pacific coast.

Production of Food Crops.

In order to bring about the production of food crops adequate to meet the consuming needs of the country and the export demand, the Secretary says that one of the greatest agricultural needs is the stabilizing of production. This can be accomplished in large measure through the use of better adapted or improved crop varieties, more systematic and rational crop rotations, and improved agricultural practice generally, including, in many sections, larger attention to livestock production, all of which are essential to an enduring and economically sound agriculture. "It is highly desirable," he says, "further to broaden the areas for the production of staple crops as far as experience and sound economics may warrant." He cites a number of instances showing what has been done in this direction and emphasizes the importance to production of controlling plant diseases and insect pests and quarantine measures to prevent their entry or spread.

The campaign against citrus canker, he says, is progressing very satisfactorily. Although thorough inspection of citrus plantings will be necessary, at least throughout the coming year, it is believed that Florida is now so nearly free of the disease as to render its eradication from that State practically certain. In Texas, Louisiana, Alabama, and Mississippi the work has been more difficult, but even in these States the disease will be effectively checked if no unusual drawbacks are encountered.

Distribution of Products.

The report sets forth what has been accomplished by the Office of Markets and Rural Organization in bringing about more effective distribution of farm products and in avoiding unnecessary wastes. The value to the producer of fruits and vegetables of the experimental market news service inaugurated in 1915, the Secretary reports, has resulted in insistent demands for an extension of the work. During the past year telegraphic reports have been received from 33 important metropolitan markets and from all railroads serving producing territory. This information has been furnished to growers, shippers, and distributors. The actual monetary saving due to a wider knowledge of market conditions has exceeded the cost of the service many fold. Some of the benefits resulting from this attempt to develop for the farmer a reliable business basis, the report states, are the education of producers in the proper marketing of farm products, the avoidance of unnecessary loss due to diversions in transit, and the encouragement given to growers who desire to reach new consuming centers. Following a systematic survey of the centralized livestock markets and a study of the methods and costs of marketing live stock and meats, plans have been developed for the inauguration of a demonstration market news service for live stock similar to that now being conducted for perishable crops. An appropriation of $65,000 is available for this purpose and will be utilized during the present fiscal year.

The investigations concerning methods of handling and grading perishable products and the practicability of the standardization of the products and their containers have progressed rapidly. Several standardization laws, Federal and State, have been enacted during the year.

Food and Drugs Act.

The enforcement of the Food and Drugs Act is discussed in some detail. The Secretary states that the reorganization of the Bureau of Chemistry, which took place in 1913, has effected a material reduction in the cost of operation and has made possible the accomplishment of substantial results. As a result of the activities of the bureau, there has been a marked improvement in the quality of articles in common use, such as eggs, milk, beans, shellfish, citrus fruit, tomato products, canned foods, and cottonseed meal and other feed for animals, entering interstate commerce.

The second year's operation of the cooperative agricultural extension act of May 8, 1914, according to the Secretary, has been attended with a steady development of the nation-wide system of practical instruction in agriculture and home economics.

The Secretary states that the half of agriculture embracing the marketing of farm products, rural finance, and rural organization has strikingly occupied attention during the last three and one-half years. He points out that in view of the complexity and novelty of the problems, the accomplishments, legislative and administrative, have been notable and significant. He refers to the establishment and rapid growth of the Office of Markets and Rural Organization and to the enactment of a number of hightly important laws—the cotton-futures act, the United States grain-standards act, the United States warehouse act, the Federal farm-loan act, and the Federal-aid road act.

The report also indicates the progress which has been made in the administration of the Federal-aid road act, the grain-standards act, and the warehouse act, and points out the important developments, legislative and administrative, which have taken place during the past year in connection with the national forests.

Specific Recommendations.

Among the specific recommendations in the report are:

1. That the Secretary of Agriculture be authorized to establish legally enforceable standards of strength, quality, or purity for articles of food and for those articles of drugs which are sold under or by a name not recognized in the United States Pharmacopœia or National Formulary. The adoption of legally enforceable standards, the report states, will benefit the consumer and the honest manufacturer. Without them it is impossible to carry out completely the purposes of the Food and Drugs Act.

2. That the department be given authority to inspect establishments producing foods and drugs intended for shipment in interstate commerce. There are many forms of adulteration, the Secretary says, which are difficult to detect without inspection of the place of manufacture. This is particularly true of foods produced under insanitary conditions.

3. The inauguration of a systematic campaign for the eradication of tuberculosis in cattle and swine. A recommendation has been included in the estimates for the fiscal year 1918 that an appropriation of $75,000 be made for the purpose.

4. That a clear distinction be drawn between national parks and national forests, and that a definite policy governing their relation be established.

5. That the name of the Office of Markets and Rural Organization be changed to Bureau of Markets. The Secretary states that

the importance of the work and the size of the organization fully justify this change, and that it is in the interest of simplicity and convenience.

COTTON SEED SUPPLY.

(Continued from page 1.)

sorts, which are now being planted to advantage in many parts of the cotton belt. The best prospects of utilization lie with organized communities devoted to the production of a single variety, because it is only in such communities that stocks of pure seed are likely to be maintained. This precaution is especially necessary with long-staple cotton, in order to preserve uniformity and thus secure the highest prices for both the lint and the seed.

Descriptions of New Varieties.

Four early-maturing long-staple varieties bred by the Department of Agriculture are now grown on a commercial scale. Three of these, Columbia, Foster, and Durango, have been sent out through the congressional seed distribution, while a fourth variety, called Express, is being planted under special conditions in the bottom lands of Mississippi.

The Columbia variety, also known as Webber, has proved to be well adapted to South Carolina and adjacent States. It was developed by selection from an eastern short-staple variety, and is as early and prolific as most of the eastern short-staple sorts. The staple has a length of $1\frac{3}{16}$ to $1\frac{5}{16}$ inches, uniform, and of good quality. The center of production is in the region of Hartsville, in Darlington County, S. C., where the variety was bred. Columbia has also done well in western Tennessee, but is not advised for the drier conditions often encountered farther west, though often giving good results in favorable seasons. The tendency under the western conditions is to produce very dense foliage and mature only a small crop.

Foster is a medium long-staple variety, producing fiber of from $1\frac{1}{8}$ to $1\frac{3}{8}$ inches, early enough to give profitable yields under boll-weevil conditions. It has been grown very successfully in Mississippi and Louisiana and appears to be the best substitute for the old late-maturing "Peeler" varieties in the region where these were grown.

Express was developed in northern Texas and is an extra-early variety, but no general distribution was made on account of features that seemed likely to attract unfavorable attention, such as small bolls, low percentage of lint, and lack of unformity. Nevertheless, good results have been reported in Mississippi, and the variety may have value for rich bottom lands where cotton usually grows rank and ripens late, but it is not recommended for other parts of the country.

Durango is a newly acclimatized Mexican variety, bred at first in Texas, but now proving to be adapted to a wide range of conditions in other States. Durango is distinctly earlier than Columbia and has given better results than other long-staple varieties in the irrigated sections of the Southwest, and in the upland districts of the Southeast. Even as far north as Norfolk, Va., it has been grown on a commercial scale for the last five years, about 1,600 acres being planted in the season of 1916. Durango is very prolific, frequently outyields short-staple varieties, and often shows a higher outturn at the gin, the percentage being usually above 30, often 32 to 34. The lint attains a length of $1\frac{1}{4}$ inches under favorable conditions, has a distinctive quality, and has found a ready market, with substantial premiums above the regular prices for short cottons. Some 20,000 bales have been grown in the Imperial Valley of California this season, and are now being sold at prices around 30 cents a pound.

O. F. Cook,
Bionomist, in charge of Crop Acclimatization Investigations.

SOIL SURVEYS.

Total of 571,463,680 Acres Have Been Investigated and Mapped.

The soils of 571,463,680 acres, or 892,912 square miles, in the United States have been investigated and mapped, either in detail or reconnoissance surveys, by the Bureau of Soils of the department, according to the report of the chief of that bureau, just issued. Of this total. 24,749,440 acres, or 38,671 square miles, in 75 areas in 32 States were mapped in detail during the past year. In addition, reconnoissance surveys were made of 5,333,760 acres in California and Wisconsin. Several areas have now been surveyed in each of the 48 States and one survey extending across the island has been completed in Porto Rico.

The soil surveys have for one purpose the study of the relation of soils to crops. The investigators study the physical and chemical nature of soils, samples of which are taken throughout the areas being surveyed, and at the same time gather from all available sources, and particularly from farmers, the kinds of crops and crop yields on the different soil types identified and mapped. The soils maps show the location and extent of the different soils with reference to roads, watercourses, schoolhouses, churches, and other landmarks, so that the farmer, by consulting the map, can determine the general character of soil on his own property.

During the past year field work for the study of the trucking soils in certain typical areas in New Jersey was completed and similar work was inaugurated in the vicinity of Norfolk, Va.

The work of classifying the lands of the national forests was in progress in each of the six western forest districts during the year. Work was done in eight States, about 20 projects and a great number of separate homestead applications being examined, mapped, and passed upon in cooperation with the Forest Service.

The Bureau of Soils is now cooperating with 19 States and there are 6 additional States in which cooperation is planned for 1918, final arrangements in each case being contingent upon appropriations by the State legislatures of funds to enable the State institution to cooperate.

BRIEF ITEMS.

Permits for the importation of 127,706 canaries were issued by the Biological Survey during the past year.

The Bureau of Soils of the department last year mapped in detail the various soils of 24,749,440 acres in 75 areas in 32 States.

Two thousand bluebill and 300 white-winged scoter ducks were found to destroy 8,000 oysters a day in a single bay near Olympia, Wash.

For correcting soil acidity, 1 ton of burned lime is practically equal to $1\frac{1}{2}$ tons of slaked lime or 2 tons of ground limestone, in case all three forms are of equal grade of purity.

Successful methods for the control of the foot-rot of sweet potatoes, a serious and destructive disease in several States, have been developed by the specialists of the department.

The Bureau of Soils is cooperating with cement mills, blast furnaces, and wool scourers with the object of enabling them to recover potash as a by-product wherever this proves to be commercially feasible.

In 1904 the actual cash road and bridge expenditure in the United States averaged slightly less than $28 per mile of rural roads. In 1915 the cash road and bridge expenditure had increased to an average of $109 per mile of road.

Practically no injury to alfalfa from summer heat has been recorded in dry climates, but high temperatures combined with much moisture in the atmosphere are so injurious that it is difficult to grow the crop successfully under these conditions.

The pasturing of corn is especially applicable to semiarid regions. The dry soil is not injured by the animals, and very little corn goes to waste or spoils by coming in contact with the soil. The stalks are left in good shape to prevent the drifting of snow.

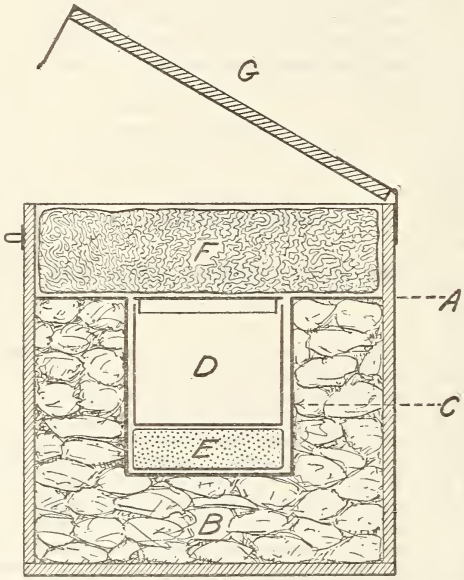
FIRELESS COOKER.

How to Make a Satisfactory Device at Home at Low Cost—Directions for Its Use.

A very satisfactory fireless cooker may be made in the home at relatively slight expense, according to specialists of the Office of Home Economics of the department. The outside of the cooker may be a tightly built wooden box, an old trunk, a small barrel, a large butter or lard firkin or tin, or a large galvanized-iron bucket with close-fitting cover. In general, a well-built, conveniently sized box is perhaps most satisfactory, though the cookers entirely encased in metal have the advantage of being fireproof.

If a box is to be used, its size will depend on the size of the cooking kettle to be used in it and on whether there are to be one or two compartments. It must be large enough to allow for at least 4 inches of packing material all around the "nest" in which the cooking kettle is to be placed. For the sake of cleanliness and convenience the nest should be lined with metal and should be a trifle larger than the cooking utensil. If an extra source of heat, such as a hot brick or plate, is to be used, a metallic lining for the nest is imperative. For this purpose a galvanized iron or other metal bucket may be used or, better still, a tinsmith can make a lining of galvanized iron or zinc which can be provided with a rim to cover the packing material. In case no hot stone or plate is to be used in the cooker, the lining can be made of strong cardboard.

For the packing and insulating material a variety of substances may be used. Asbestos and mineral wool are good and have the additional advantage that they do not burn. Ground cork (such as is used in packing Malaga grapes), hay, excelsior, Spanish moss, wool, and crumpled paper may also be used satisfactorily. Of the inexpensive materials that can be obtained easily, crumpled paper is probably the most satisfactory, since it is clean and odorless and, if properly packed, will hold the heat better than some of the others. To pack the container with paper, crush single sheets of newspaper between the hands. Pack a layer at least 4 inches deep over the bottom of the outside container, tramping it in or pounding it in with a heavy stick of wood. Stand the container for the cooking vessel, or the lining for the nest, in the center fo this layer and pack more crushed papers about it as solidly as possible. If other packing, such as excelsior, hay, or cork dust, is used, it should be packed in a similar way. Where an extra source of heat is to be used, it is much safer to pack the fireless cooker with some noninflammable material, such as asbestos or mineral wool. A cheap and easily obtained substitute are the small cinders sifted from coal ashes, preferably those from soft coal, which may be obtained at the boiler house of any mill. The cinders from hard coal burned in the kitchen range will do, however. Experiments with this material made by home-economics specialists of the department showed that it is very nearly as satisfactory as crumpled paper as a packing material. If a fireproof packing material is not used a heavy pad of asbestos paper should be put at the bottom of the metal nest and a sheet or two of asbestos paper should be placed between the lining of the nest and the packing material. Whatever packing material is used, it should come to the top of the container for the kettle, and the box should lack about 4 inches of being full. A cushion or pad must be provided to fill completely the space between the top of the packing and the cover of the box after the hot kettles are put in place. This should be made of some heavy goods, such as denim, and stuffed with cotton, crumpled paper, or excelsior. Hay may be used, but will be found more or less odorous.



Longitudinal section through fireless cooker, showing details of the construction: *A*, Outside container (wooden box, old trunk, etc). *B*, Packing or insulating material (crumpled paper, cinders, etc). *C*, Metal lining in nest. *D*, Cooking kettle. *E*, Soapstone plate, or other source of heat. *F*, Pad of excelsior for covering top. *G*, Hinged cover of outside container.

The kettles used for cooking should be durable and free from seams or crevices, which are hard to clean. They should have perpendicular sides and the covers should be as flat as possible and provided with a deep rim shutting well down into the kettle to retain the steam. It is possible to buy kettles made especially for use in fireless cookers; these are provided with covers which can be clamped on tightly. The size of the kettle should be determined by the quantity of food to be cooked. Small amounts of food can not be cooked satisfactorily in large kettles, and it is therefore an advantage to have a cooker with compartments of two or more different sizes. Kettles holding about 6 quarts are of convenient size for general use. Tinned-iron kettles should not be used in a fireless cooker, for, although cheap, they are very apt to rust from the confined moisture. Enameled-ware kettles are satisfactory, especially if the covers are of the same material. Aluminum vessels may be purchased in shapes which make them especially well adapted for use in fireless cookers and, like enameled ware, they do not rust.

How to Use the Fireless Cooker.

Obviously the fireless cooker must be used with intelligence to obtain the best results. It is best suited to those foods which require boiling, steaming, or long, slow cooking in a moist heat. Foods can not be fried in it, pies can not be baked successfully in the ordinary fireless cooker, nor can any cooking be done which requires a high, dry heat for browning. Meats, however, may be partially roasted in the oven and finished in the cooker, or may be begun in the cooker and finished in the oven with much the same results as if they were roasted in the oven entirely. The classes of food best adapted to the cooker are cereals, soups, meats, vegetables, dried fruits, steamed breads, and puddings.

When different foods are cooked together in the fireless cooker they must be such as require the same amount of cooking, since the cooker can not be opened to take out food without allowing the escape of a large amount of heat and making it necessary to reheat the contents. It would not do to put foods which need about one and one-half hours to cook into the cooker with a piece of meat which would stay several hours.

The size of the container used in cooking with the fireless cooker should be governed according to the amount of food to be cooked. Small quantities of food can not be cooked satisfactorily in a large kettle in the fireless cooker. If a large kettle must be used,

better results will be obtained if some other material which holds heat fairly well is used to fill up the empty space. This may be accomplished in several ways. One is to put the small quantity of food to be cooked into a smaller, tightly closed kettle, fill the large kettle with boiling water and put the small kettle into it, standing it on an inverted bowl or some other suitable support. This boiling water will take up and hold the heat better than air would. Several smaller dishes (if tightly covered) may be placed in the kettle surrounded by boiling water. Baking-powder or other tins often are found useful for this purpose. Another way is to place one food in a basin which just fits into the top of a large kettle and to let some other material, some vegetable perhaps, cook in the water in the bottom of the kettle. Two or more flat, shallow kettles placed one on top of the other so as to fill the cooker enable one to cook small amounts of different foods successfully. Such kettles, made especially for use in fireless cookers, may be purchased.

Time Required for Cooking.

The time which each kind of food should stay in the cooker depends both on the nature of the food and on the temperature at which it remains inside the cooker, and before recipes for use with the fireless cooker can be prepared one must have some means of knowing how temperatures are preserved in it. In experiments made in the Office of Home Economics a 6-quart kettle was filled with boiling water and put into the cooker, the packing of which happened to be newspaper. The temperature of the water, which was 212° F. when put into the cooker, was found to be 172° F. after four hours had elapsed and 155° F. after eight hours had elapsed. This shows the advisability of the common custom of allowing food to remain undisturbed in the cooker for at least six or eight hours, or in some cases overnight. If a soapstone, hot brick, or other extra source of heat is used, less time will be required. Materials which are denser than water (sugar sirup as used in cooking dried fruit), and therefore can be heated to a higher degree, will keep up the temperature longer when put into the cooker. Thus the density of the food material, as well as the amount and the length of time that the apparatus retains the heat, must be taken into consideration in determining how long different materials must be cooked in the cooker.

The recipes for dishes to be prepared in the fireless cooker differ somewhat from those for foods cooked in the ordinary way, chiefly in the amount of water or other liquids called for. Less liquid should be put into the food to be prepared in an ordinary fireless cooker, since there is no chance for water to evaporate. The cook must be guided largely by experience in deciding how long the food should be heated before being put into the cooker and how long it should be allowed to remain there.

PLANT QUARANTINE.

Many Insect Pests and Diseases Detected Through State and Federal Inspection.

One hundred and ninety-three different kinds of insects which might prove hurtful to American crops and 116 plant diseases of similar significance were detected by State and Federal inspection during the last fiscal year on plants and plant products offered for import into the United States, according to the report of the Federal Horticultural Board of the United States Department of Agriculture. Of the insects, 14 were scale insects, such as pear scale, though they range from scales found on orchids, coconut, and bamboo to other forms found on wistaria, camellias, hemlocks, and pines. In addition, nests of the brown-tail moth, egg masses of the European tussock moth, pupæ of the dagger moth, and cocoons of the pine sawfly were discovered. Of interest was the finding of a fourth potato weevil in the United States, which was discovered in Irish potatoes imported from the Andes. Of the diseases, citrus canker was found in a number of shipments, and the finding of powdery scab on wild potatoes from the east slope of the Andes is taken to indicate clearly that it is the home of this disease of the potato.

The action taken with regard to foreign cotton seed which formed part of a cargo of the British steamship *Appam* brought to Newport News as a German prize of war, the report cites, is taken as illustrating the department's activities in keeping out pests. This seed was to be sold by an order of the United States Admiralty Court. An examination of the seed by specialists of the department showed many traces of infestation by the pink boll worm. Immediate steps were taken to set aside the sale, and the very large bulk of cotton seed was placed in sulphuric-acid vats as a preliminary to the conversion of the seed into fertilizer. As additional precautions, the two holds of the *Appam* which had contained the seed were fumigated with a strong dosage of sodium cyanid, and the dock at Newport News was thoroughly swept and carefully inspected to make certain that no scattered seeds remained.

The fact that the great majority of the insects in this seed had emerged during the long cruise of the *Appam*, the report states, reduced the danger materially.

The board reports that a number of small shipments of prohibited foreign plants and plant products were intercepted by customs officials and inspectors of the Department of Agriculture, and in each instance the goods were either reexported or destroyed.

The report summarizes in brief the various new quarantines promulgated and a modification in existing quarantine regulations.

When alfalfa is to follow winter wheat or other small grain crops in the East, a thorough disking, followed by frequent harrowings, will often be all that may be required, provided the land is worked shortly after the grain is removed. When plowing in this case is necessary, the preparation of the seed bed will often be facilitated by disking ahead of the plow and by following the plow at once with a pulverizer and harrow.

Rye will thrive on acid or poor soils where wheat will not grow well and may be planted on any soil later then wheat. It makes one of the earliest spring pastures and is excellent as a green manure. These characteristics make rye an important factor in farm economy, even in sections where its yield of grain is not as profitable as that of wheat.

PROGRESS IN TICK ERADICATION.

[July 1, 1906, to Dec. 11, 1916.]

State.	Counties infected July 1, 1906.	Counties infected Dec. 11, 1916.		Counties released.		Area infected July 1, 1906.	Area infected Dec. 11, 1916.	Area released.	
		Whole.	Part.	Whole.	Part.				
	No.	*No.*	*No.*	*No.*	*No.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*P. ct.*
Alabama	67	39	1	27	1	51,279	29,777	21,502	42
Arkansas	75	44	8	23	8	52,525	34,257	18,268	35
California	15	.....	.....	15	.....	79,924	.....	79,924	100
Florida	50	47	1	2	1	54,861	51,061	3,800	7
Georgia	149	96	.....	56	.....	57,438	40,875	16,563	29
Kentucky	2	.....	.....	2	.....	841	.....	841	100
Louisiana	63	59	1	3	1	45,409	43,142	2,267	5
Mississippi	81	30	1	50	1	46,362	15,358	31,004	69
Missouri	4	.....	.....	4	.....	1,386	.....	1,386	100
North Carolina	75	24	1	50	1	37,365	12,351	25,014	67
Oklahoma	[1] 61	27	7	22	12	47,890	25,617	22,273	46
South Carolina	44	12	.....	32	.....	30,495	10,467	20,028	65
Tennessee	42	.....	.....	42	.....	16,987	.....	16,987	100
Texas	190	104	3	83	3	191,885	154,753	37,132	19
Virginia	30	3	1	26	1	13,918	1,776	12,142	87
Total	948	485	24	437	29	728,565	419,434	309,131	43

[1] Only portions of 5 of the 61 counties were quarantined.

PROVING ITS MERIT.

Agricultural Extension Demonstrating Its Value in Development of Farming Business.

As a result of the realization that improved methods may be brought to the attention of the farmer more effectively by personal contact and demonstration than in any other way, the county agricultural agent work was begun in the Northern and Western States in 1911 by the United States Department of Agriculture, the State agricultural colleges, and county agencies, in cooperation.

Growth of the Work.

During this year only 5 county agents were operating in the Northern and Western States, but by July 1, 1916, the number had increased to 419, the work having been taken up in every one of the Northern and Western States. While the general nature of the activities of the agents is the same throughout the territory, the provisions under which the States assist in the work vary considerably. In some States the cooperation of organized groups of farmers in the counties is a prerequisite to contribution of State funds, and in many instances these farmers contribute directly a substantial part of the necessary expense money. Even where the existence of such organizations is not required, many have sprung up and are playing important parts in the success of the county agent work.

Money for carrying on the county agent activities is contributed by the Federal Government through the United States Department of Agriculture and the agricultural extension act fund; by the States, usually through the agricultural colleges; by county supervisors; by local farmers; and by public-spirited individuals and organizations in both county and city. The average total annual budget for the work of each county agent is about $3,000.

The County Agents' Plan of Work.

The work of the county agents varies with the needs of their communities, but in general is addressed to the improvement of agricultural methods, practices, and conditions wherever possible through demonstrations, talks, and publications, and through calling attention to good methods already practiced by the best farmers of the community. The needs of the county usually are discussed by the agents with State extension-work leaders, county officials, and leading farmers, and a project program adopted. Farmers are then found who are willing to cooperate in the demonstration of certain improved methods and, when results of the demonstrations are apparent, field meetings are held in order that the farmers may see the results and determine their value. The agent also assists the farmers to organize cooperative associations; conducts short courses in agriculture; holds meetings, often illustrated by lantern slides of local agricultural subjects; writes timely agricultural articles which are published in the local county press; and carries on other similar activities.

Fitting the Work to Local Needs.

How the activities of the agents vary with their environment is shown by the work with corn. In the far North and Northwest this work has been chiefly in securing varieties that will mature in the short growing season. In the corn belt principal attention has been given to the testing of seed and the standardization of varieties. In New York and New England emphasis has been placed on the growing of more satisfactory silage varieties.

In Illinois activities have centered in some sections on the introduction of alfalfa, and in one county having an agent since 1914 there is now a greater acreage of alfalfa than there was in the whole State in 1914. Practically throughout the Northwest the agents have striven to bring about the more general treatment of oat seed to prevent smut. In some counties where demonstrations have been carried on for three years the practice has become almost universal. The average increase in yield, due to the treatment, on all demonstrations has been 8.8 bushels, and has been obtained at a cost of less than 10 cents.

Improving Live-Stock Operations.

The county agents have been instrumental in bringing about the introduction of live stock in regions where grain farming had been exclusively or largely practiced, and in all sections of the Northwest have done much toward the standardization of breeds. One saving they have effected frequently in cattle raising is the exchange of sires by different communities. This has, to a large extent, displaced the old plan of selling fine animals for beef after several years of service to prevent inbreeding. Many head of live stock also have been saved through the advice given by the agents to the owners of diseased animals and through the direct treatment of the animals by the agents. Nearly 300,000 hogs have been treated in this way for cholera and many head of cattle were saved by the work of the agents in preventing the spread of foot-and-mouth disease.

Soil-Improvement Work.

In their work as regards soils the agents have made plans which have resulted in the draining of 143,700 acres of land and the irrigation of nearly 50,000 acres. Farmers have been shown how to effect considerable savings and to secure a product better adapted to their needs by the home mixing of commercial fertilizers, how to develop local supplies of limestone and lime and use them to best advantage, and how to obtain best results from green manuring.

Work in Relation to Farm Business.

The county agents in 1915 assisted 11,523 farmers in analyzing their farm business and in determining the factors limiting income. In the cooperative purchase of farm supplies and cooperative marketing of farm products the agents in 1915 promoted the organization of 93 farmers' exchanges and 164 other purchasing and marketing associations which did a combined business of more than $3,500,000 and effected a saving to the farmers of more than $275,000.

In general, the work of the county agents in the Northern and Western States during the four years of its existence has been highly constructive. Its influence has been felt in increased crop yields, the introduction of new crops, and help in the control of insect pests and plant diseases. It has introduced improved live stock, inaugurated better feeding and breeding methods, induced better sanitation, and aided in the control and eradication of animal diseases. It has taught the farmer better methods of conserving the fertility of his farm through adequate drainage, proper fertilization, and the utilization of humus-forming materials. Its tendency is toward standardization of farming in crops, live stock, and methods. It has assisted him in marketing his products and the purchasing of his supplies. It has developed better systems of farm management, assisted in securing farm laborers, and assured to the farmer a more adequate return for his investment and labor. It has helped to make life in the country more satisfying through the installation of home conveniences to lighten the burden of the farm women, through interesting the young people in wholesome rural activities, and through the creation of a genuine community spirit of self-help, self-improvement, and self-assertion.

WORK IN DATE BREEDING.

The prohibition of export of date offshoots from the French possessions in north Africa and the interruption of imports from other places have given new impetus to the date-breeding work underway for the past 10 years at the department date garden at Indio, Cal. Many new seedling date varieties are now being originated in America: some of which, according to the annual report of the Chief of the Bureau of Plant Industry, are apparently equal to the finest that have resulted from 3,000 years of date culture in the Old World.

The best results in the control of grasshoppers can be obtained when all the farmers in a community cooperate.

FERTILIZER PROBLEM.

Bureau of Soils Conducts Experiments in the Production of Potash, Nitrogen, and Phosphates.

The annual report of the Chief of the Bureau of Soils, United States Department of Agriculture, announces that the fertilizer investigations of that bureau have been established as a separate administrative unit. The work of the division is divided along three lines which deal, respectively, with the three fertilizer ingredients—potash, nitrogen, and phosphates.

Potash.—A plant will be erected on the southern Pacific coast to experiment on a commercial scale with the problem of extracting potash from kelp. This experimental plant is made possible by a special appropriation of $175,000 for this purpose. The bureau also is cooperating with cement mills and blast furnaces to determine by analysis whether the potash now lost warrants the necessary expense to recover it. It is investigating the question of extracting potash from wool scourings, and is making an effort to get in touch with companies in the country which are engaged in cleaning raw wool on a large scale. The bureau also has published a number of alunite determinations dealing with various methods of treating alunite for potash.

Nitrogen.—The bureau has equipped a laboratory at Arlington (Va.) Experiment Farm with apparatus for testing the different methods proposed for fixing atmospheric nitrogen, and contracts have been let for much additional equipment to extend this work. This extension of the work has been delayed by the impossibility of securing immediate delivery of machinery.

In connection with the work on phosphates, an electrical furnace has been in operation working on the problem of volatilizing phosphoric acid and fixing nitrogen in one operation. Apparatus has also been installed for experimenting with the Ostwald process of oxidizing ammonia for the production of nitric acid. Both these projects are attended with technical difficulties and no important results can as yet be announced.

Investigations on city wastes have been continued and an apparatus and processes for rendering garbage and other similar wastes have been devised which it is believed will prove superior to those now in use for this purpose. A full report on city wastes is now in course of preparation. Some work also has been done in determining the availability of various nitrogenous fertilizer materials when applied to the soil, and this work is being continued.

A study of the subject of ammonia from the by-product coke ovens has been made and published.

Phosphates.—At the Arlington laboratory an electric furnace has been installed and work on the volatilization of phosphoric acid from phosphate rock has been begun. A Cottrell precipitator was installed and, while minor adjustments remain to be made, the essential fact that phosphoric acid may be economically collected in this way has been demonstrated.

A process for producing sulphuric acid has been perfected and patented which gives promise of being much more satisfactory than the process now in use.

General.

The problem of producing concentrated fertilizers containing all three fertilizer ingredients or any two of them has been attacked from several directions, and methods have been worked out in the laboratory for producing ammonium-potassium-phosphate, potassium-phosphate, and ammonium-phosphate by processes which are new and very promising. Patents on all these processes, for the benefit of the people of the United States, have either been secured or have been applied for.

RECLAIMING FOREST LAND.

Farm Management Studies Show Initial Cost High—Balanced by Ultimate Results.

Under the conditions which prevail in most localities where the problem of clearing land is a serious one, the land must in the main be cleared by its owners at a financial sacrifice. This statement is taken from the annual report of the Office of Farm Management, United States Department of Agriculture. Studies of logged-off lands made by this office indicate that the original forests which covered much of the good agricultural land of this country have been, in

GIVE VALUABLE INVENTIONS TO THE PUBLIC.

Twenty-nine valuable inventions and discoveries made by scientists of the department have been dedicated to the public during the last fiscal year, according to the annual report of the Solicitor. In accordance with the policy of the department, its workers, when they discover valuable processes or devices, obtain what is popularly known as a public-service patent, the chief purpose of which is to prevent anyone else from patenting the invention. This insures to the public the free use of these processes and devices which have been developed at public expense in connection with the investigational work of the department.

Following is a list of patents granted and applied for, those which are pending being indicated with an asterisk:

Applicant.	Bureau.	Invention.
Orlin R. Rogers	Weather Bureau	*Apparatus for recording duration of rainfall.
Frank F. Chase	Plant Industry	*Gravity fruit separator.
Howard C. Pierce	Chemistry	Poultry-picking frames.
Wm. H. Mast	Forest Service	Planting board.
Emil G. Boerner	Plant Industry	Device for sampling, mixing, and blending seed, flour, meal, and other like material.
Herbert C. Gore and Charles O. Townsend.	Chemistry	Process for making sirup from sugar beets.
Marion Dorset and Howard J. Shore.	Animal Industry	*Process for the manufacture of concentrated hog-cholera antitoxin.
Marion Gilbert Donk	Chemistry	*Process for producing high-grade rosin from low-grade rosin.
Herbert H. Bunzel	Plant Industry	*Thermostat.
Harrison E. Patten	Chemistry	*Apparatus for impregnating liquids with gas.
Wm. H. Waggaman	Soils	Process for manufacturing sulphuric acid.
Edmund B. McCormick	Public Roads and Rural Engineering.	*Torsion dynamometer.
George A. Olson		*Process for drying gluten.
Leonard R. Ingersoll	Forest Service	*Apparatus for measuring the gloss of nonmetallic surfaces.
Harry D. Tiemann	do	*Dry kilns for drying lumber and other moisture-bearing substances.
Peter A. Yoder	Plant Industry	*Sirup evaporator.
William R. Ross, Albert R. Merz, and John N. Carruthers.	Soils	*Concentrated fertilizers.
Samuel C. Hood	Plant Industry	Rotary grating machine.
John H. Clack	Forest Service	*Pack frame.
Paul J. Fox	Soils	*Process for extracting potash and alumina from alunite.
John F. Barghausen	Plant Industry	*Interlocking device.
Do	do	*Machine for gathering crimson clover.
Frederick C. Weber and Frank M. Allen.	Chemistry	Fish-positioning machine.
Do	do	*Machine for cutting and eviscerating fish.
Charles S. Reeves, Provost Hubbard, and Richard H. Lewis.	Public Roads and Rural Engineering.	*Process for preparing waterproof paving material.
Herbert C. Gore	Chemistry	*Process for preserving fruit juices.
Thomas B. Lear	Animal Industry	*Stamping tool or punch.
Jason L. Merrill	Office of Markets and Rural Organization.	*Method for making flax tow.
Ralph B. Adams	Forest Service	*Portable telephone.

the main, removed at an expense out of proportion to the immediate results. But the apparent loss, continues the report, appears to have been balanced in the long run, for the sacrifices thus made enabled an army of men with their families to acquire economic independence.

This study of logged-off lands is but one of many that are being carried forward by the Office of Farm Management. Among the branches of work in which progress is reported may be mentioned the farm management survey, farm organization, history and distribution of farm enterprises, crop economics, farm accounts, and farm equipment.

In the survey work substantial progress is reported in the analysis of several thousand farms in Pennsylvania, Michigan, Indiana, Utah, Ohio, and Georgia. The object of these studies is to secure authentic data covering the farmer's investment, receipts and expenditures, the net income of the farmer's business, and other important factors, which, on analysis, will indicate the most efficient and profitable type of farming in a given locality.

In the study of organization problems there have been accumulated an array of facts relative to the different ways the farmers of the country have organized their business and the various degrees of success that have attended these different types of organization. As a result of these investigations a clearer insight into the organization problems of the farm has been gained and also greater knowledge as to how to solve those problems.

CITRUS CANKER.

No final statement as to the outcome of the campaign against citrus canker can be expected within a period of at least two years. The campaign, however, is progressing very satisfactorily in the commercially important orange and grapefruit regions of Florida. Even in the few places where citrus-canker outbreaks have occurred in commercial districts and in old trees, the disease can be eradicated promptly and effectively. Although thorough inspection of citrus plantings will be necessary, at least throughout the coming fiscal year, it is believed that Florida now is so nearly free of the disease as to render its eradication from that State practically certain. In Texas, Louisiana, Alabama, and Mississippi the work has been more difficult from the beginning because of the more scattered plantings and the relatively smaller interests involved. Furthermore, in all these States the unusually severe tropical storms of the present year have caused unexpectedly wide distribution of the disease in some areas. Even in these States, however, the progress of the work is encouraging, and if no further unusual drawbacks are encountered the disease will be effectually checked.—Annual Report of Secretary of Agriculture.

CANE SIRUP EXPERIMENTS.

Experiments to improve methods for making cane sirup are in progress, according to the recently issued report of the Chief of the Bureau of Chemistry. The object of this work is to produce a high-grade cane sirup of a bright, uniform color which will not ferment or crystallize. As a result of laboratory work, a method has been developed, though not yet applied on a large scale, by which a pure cane sirup can be made which will not crystallize or ferment. This method will be tried out experimentally on a commercial scale this fall, and if it proves satisfactory a description of the process will be published by the Department of Agriculture.

Good stable manure is one of the most satisfactory top-dressings for alfalfa. It should be applied in the late fall or early winter and distributed evenly. Where manure is not available, 300 to 400 pounds per acre of acid phosphate will nearly always give good results.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Secretary of Agriculture, DAVID F. HOUSTON.
Executive and administrative head of the department.

Assistant Secretary of Agriculture, CARL VROOMAN.
Assists in directing the work of the department. In the absence of the Secretary becomes Acting Secretary.

Solicitor, FRANCIS G. CAFFEY.
is legal adviser to the Secretary and the heads of the several branches of the department, conducts its legal work, and represents it in all legal matters.

Office of Farm Management, W. J. SPILLMAN, *Chief*.
Studies the details of farm practice from a business standpoint, with a view to determining the most efficient methods of operation.

Weather Bureau, CHAS. F. MARVIN, *Chief*.
Conducts meteorological investigations; issues weather maps; handles all work relating to climate, storm warnings, frost warnings, etc.

Forest Service, HENRY S. GRAVES, *Forester*.
Administers the national forests and develops use of their resources; directs all research work relating to forestry and forest utilization.

Bureau of Animal Industry, A. D. MELVIN, *Chief*.
Studies and gives information regarding live stock; conducts the meat-inspection and quarantine work.

Bureau of Plant Industry, WM. A. TAYLOR, *Chief*.
Investigates problems relating to plants and plant industries.

Bureau of Chemistry, CARL L. ALSBERG, *Chief*.
Enforces the Food and Drugs Act; investigates questions of agricultural chemistry.

Bureau of Soils, MILTON WHITNEY, *Chief*.
Surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Crop Estimates, LEON M. ESTABROOK, *Chief*.
Collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Bureau of Entomology, L. O. HOWARD, *Chief*.
Studies insects in their relation to agriculture.

Bureau of Biological Survey, E. W. NELSON,[1] *Chief*.
Studies wild birds and animals, their distribution, habits, and relations to agriculture; administers the Federal bird and game reservations and the Federal laws protecting game and regulating the importation of birds and animals. Controls noxious mammals and experiments in fur farming.

Office of Public Roads and Rural Engineering, LOGAN WALLER PAGE, *Director*.
Studies and supplies information regarding road making, road management, road maintenance, farm irrigation, farm drainage, and rural engineering and architecture.

States Relations Service, A. C. TRUE, *Director*.
Supervises the use of Federal funds for agricultural experiment stations and agricultural extension work; investigates agricultural education, and food, dietetics, clothing, and household equipment and management.

Office of Markets and Rural Organization, CHARLES J. BRAND, *Chief*.
Investigates problems pertaining to marketing and distribution of farm products and organizing rural communities for marketing, rural credit, and other purposes. Enforces Cotton-Futures Act.

Division of Publications, JOS. A. ARNOLD, *Chief*.
Supervises the work connected with the printing and distribution of the publications of the department.

Federal Horticultural Board, C. L. MARLATT, *Chairman*.
Assists in the enforcement of the Plant Quarantine Act of August 20, 1912.

Insecticide and Fungicide Board, J. K. HAYWOOD, *Chairman*.
Assists in the enforcement of the Insecticide Act of 1910.

[1] Succeeds Henry W. Henshaw, resigned.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., DECEMBER 27, 1916. No. 21

OFFICIALS COOPERATE.

Federal and State Food and Drug Laws Supplement Each Other—Enforcement More Effective.

The work accomplished by the cooperative efforts of the officials charged with the enforcement of the Federal Food and Drugs Act and the officials who enforce State laws regulating commerce in similar products is outlined in the annual report of the Chief of the Bureau of Chemistry, U. S. Department of Agriculture, which has just been published. The report states that such cooperation has been more effective than ever before owing to the manner in which the office of State Cooperative Food and Drug Control has conducted its work. This office was established in 1914 for the purpose of making food and drug law enforcement more effective by facilitating the systematic exchange of information regarding law violations and methods of detecting them between Federal and State officials and among officials of the various States. In the absence of some quick method of distributing such information it might be possible for a manufacturer to dispose of his adulterated products in other States for some time after detection.

The cooperative work, however, has accomplished much more than the exchange of information. Federal and State officials have united their efforts in improving the food supply in definite localities and for the correction of specific abuses in the production and sale of particular products. For instance, the Federal and State officials cooperated in the sanitary control of the milk supply of small cities near State boundaries in the States of Illinois, Iowa, Missouri, Kansas, Nebraska, and in New England. These cities received part of their milk supply from the State in which they were located and part from neighboring States. The part of the supply that came from other States could best be handled under the Federal law, for that law applies to all foods and drugs shipped into interstate commerce; that is, shipped from one State to another. Thus all parties responsible for the shipment of adulterated milk could be reached whether they resided in the State where the milk was sold or not. Without the cooperation of the Federal officials it would not be possible for the State officials to reach effectively the offenders residing in other States. "It is proposed to repeat this work year after year," the report states, "extending it each year to new territory." Similar cooperative work has been done on the control of the shipment of decomposed eggs so effectively that this traffic has been broken up.

Food and drug officials found that, owing to high prices prevailing for certain synthetic drugs used extensively by physicians in the treatment of various diseases, there were being put on the market cheap imitations which were sold under the name and label of the genuine medicines but which on examination were found to have little or none of the therapeutic effects of the genuine articles. Though a number of shipments were seized, and a number of individuals successfully prosecuted under the Federal Food and Drugs Act, and indictments returned under the postal laws, the traffic could not be wholly suppressed by Federal action, nor all the offenders reached. The situation was laid before the State and municipal officials who instituted many prosecutions and seizures, with the result that the joint action of the Federal, State, and municipal officials broke up this fraudulent traffic.

As the result of joint action between the Federal and State officials, or independent action based upon the exchange of information regarding law violations, much work was done during the year to clear the channels of commerce from decomposed canned goods, decomposed fish and poultry, polluted or watered oysters, watered scallops, liquors containing wood alcohol, misbranded nostrums, adulterated oats, misbranded cottonseed meal, misbranded stock feeds, and a large number of other adulterated or misbranded foods and drugs.

The work of the office of State Cooperative Food and Drug Control has brought about greater uniformity in the administration of the Federal and of the various State food and drug laws. In the opinion of the food and drug officials, uniform and cooperative action makes it easier for the honest producers and distributors to comply with all the provisions of the different laws relating to their products, and makes it harder for dishonest manufacturers, who purposely try to evade the laws, to escape detection.

Investigations relating to the sulphur bleaching of commercial oats indicate that the bleaching process not merely bleaches the hull and berry, but reduces the germinating quality of the oats in most instances.

MARKETING AND FINANCE

What the Government Is Doing to Help the People Finance Their Farms and Market Their Produce.

The measures adopted in the last few years to assist the farmer in what may be called the business side of his life are emphasized in the new report of the Secretary of Agriculture. On this subject the Secretary says, in part:

The half of agriculture embracing the marketing of farm products, rural finance, and rural organization has strikingly occupied attention during the last three and one-half years. Before 1913 little systematic thought had been devoted to it, and there did not exist, either in the States or in the Nation, effective instrumentalities to furnish assistance and guidance to farmers in this field, nor had the laws necessary to remedy abuses and control unfavorable conditions been formulated or enacted. In view of the complexity and novelty of the problems, the accomplishments—legislative and administrative—have been notable and significant. This seems an opportune time to summarize them.

Early in 1913 a program for the ensuing four years was developed. This program in large measure has been executed. In the first place provision was made promptly for the creation of the Office of Markets and Rural Organization. Beginning with a modest sum, the appropriations for this office, including those for enforcing new laws to promote better marketing, have increased to $1,242,000. Quickly an effective organization was developed, and to-day the Nation possesses in this department the largest and best trained and supported staff of experts dealing with the distribution of agricultural commodities and rural organization to be found anywhere in the world. It is engaged in investigating all the larger and more difficult problems confronting farmers in this new field.

The matter of establishing standards for staple agricultural products, of supervising the inspection of grains shipped in interstate and foreign commerce and the operations of cotton futures exchanges, of devising financial machinery suited to the needs of the rural population, of developing a better system of warehouses for agricultural products, and of Federal aid in highway construction received careful attention. The result was

the enactment of a number of highly important laws—the cotton-futures act, the United States grain-standards act, the United States warehouse act, the Federal farm loan act, and the Federal-aid road act.

Under the cotton-futures act standards for cotton have been established, the operations of the futures exchanges have been supervised, and cotton trading has been placed on a sounder basis. Quotations for spots and futures have maintained a steady relation to each other. Future quotations now are better indications to the farmer of the value of his commodity than formerly. This uniformity has demonstrated the value of the future markets for legitimate hedging purposes. It is clear, therefore, that the general purposes of the act have been, and are being, accomplished.

The United States grain-standards act will bring about uniformity in grading, enable the farmer to obtain a fairer price for his product and to improve its quality, and prevent or diminish materially the shipment of adulterated grain. Plans for its enforcement have been developed as rapidly as possible. Official standards for shelled corn have been promulgated.

In order that the work of licensed inspectors may be supervised properly, and appeals and disputes under the act dealt with promptly, it has seemed advisable for the present to divide the country into 32 districts. This number may be increased when standards for other grains have been established. The districting has been made with a view to place all sections of the country in convenient reach of a grain supervisor.

The United States warehouse act authorizes the Department of Agriculture to license bonded warehouses which handle certain agricultural products. It will make possible the issuance of reliable and easily negotiable warehouse receipts, promote the better storing of farm products, and encourage the standardizing of storages and of marketing processes. The rules and regulations for its enforcement are in course of preparation, and interested parties will be given opportunity to submit suggestions.

The Federal farm-loan act creates a banking system which will reach intimately into the rural districts, operate on terms suited to the farmer's needs under sympathetic management, introduce business methods into farm finance, bring order out of chaos, reduce the cost of handling farm loans, place upon the market mortgages which will be a safe investment for private funds, attract into agricultural operations a fair share of the capital of the Nation, and lead to a reduction of interest.

A provision in the Federal reserve act, which was approved on December 23, 1913, authorized national banks to lend money on farm mortgages, and recognized the peculiar needs of the farmer by giving his paper a maturity period of six months.

The Federal-aid road act, approved July 11, 1916, provides for cooperation between the Federal Government and the States in the construction of rural post roads and of roads and trails within or partly within the national forests. This measure will conduce to the establishment of a more effective highway machinery in each State, strongly influence the development of good road building along right lines, stimulate larger production and better marketing, promote a fuller and more attractive rural life, add greatly to the convenience and economic welfare of all the people, and strengthen the national foundations. Immediately after the approval of the act, plans were formulated for its administration. Rules and regulations were promulgated on September 1. Thirty-two States have indicated their intention to assent to the provisions of the act—one through its legislature and the others through their governors. It has been determined that nine States have legally assented to the act and are in position to meet its requirements. As soon as certain details have been arranged the department will be prepared to cooperate with these States. Eight States have submitted specific projects for consideration. In one of these States four projects have been approved tentatively, and the necessary project agreements are in course of preparation.

The work of the Office of Markets and Rural Organization has developed very rapidly, and some notable results have been secured. Definite assistance has been rendered to the fruit interests of the States of Oregon, Washington, Idaho, and Montana. An organization composed of cooperative associations, corporations operating for the producers, and individual growers was formed during the past year. The purpose of the organization is to secure broader distribution through the establishment of uniform grades and marketing methods. Through it the fruit industry of the Northwestern States should be placed upon a more efficient business basis. It comprises 65 per cent of the northwestern fruit industry, representing an investment of $150,000,000 and supporting approximately 20,000 growers. This is probably the most important single activity in forming cooperative organizations that has yet been undertaken by the department.

Preliminary plans have been formulated for the investigation of foreign markets for American farm products and for assistance in the development of the export trade under normal conditions. A representative of the department recently conducted investigations in Europe along this line. The work, in so far as possible, will be done in close cooperation with the Departments of State and Commerce.

A survey of State marketing activities has been made and the results published. Provision was made in the appropriation act for the fiscal year 1917 for cooperation with the several States in the employment of marketing agents. This provision should enable the department to bring about a close coordination of the marketing activities and policies of the various States with those of the department.

The issuance of monthly cold-storage reports on apples has been continued, and the work has been extended to include butter, eggs, and cheese. These reports show the cold-storage holdings throughout the country and include a comparison of the holdings of the current year with those of the previous year. In cooperation with carriers, extensive investigations of the economic waste of foodstuffs in transit have been conducted. The object of these investigations is to secure better cooperation between shippers and carriers and greater efficiency in methods of handling, with a view to eliminate, or at least greatly to reduce, the present waste.

Well-tested systems of accounts and records for primary grain elevators, for live-stock shipping associations, and for cooperative stores have been issued. Systems for country creameries and cotton warehouses have been devised and are being tested under commercial conditions. Systems perfected by the department for farmers' cooperative elevators and for fruit and produce associations already are in extensive use. A plan for adapting farmers' grain-elevator companies to the patronage-dividend basis has been worked out and published.

Marketing Live Stock and Meats.

A systematic survey of centralized live-stock markets, begun during 1915, has been extended to cover practically all the large stockyard centers. Arrangements have been made with 58 stockyard companies to secure monthly reports of live-stock receipts and shipments. A uniform system of market records has been adopted, at the instance of the department, by a number of the yards. Twenty-six companies are reporting stocker and feeder shipments separately, in accordance with a form prepared by the Office of Markets and Rural Organization.

An investigation of the organization and conduct of cooperative live-stock shipping associations, begun during 1915, has been completed and the results published.

A conference relative to the marketing of live stock and meats was held at Chicago November 15 and 16, 1915, for the purpose of "ascertaining the essential facts pertaining to the industry, with a view to bringing about more stable marketing conditions, more efficient methods, closer cooperation, and a better understanding among all the interests connected with the industry."

Methods and costs of marketing live stock and meats in the United States were investigated. A preliminary investigation of the

sources, accuracy, and use of market reports on live stock and meats has been made. The results of this study also have been published and have been utilized in the development of plans for the organization of a demonstration market news service for live stock similar to that now conducted for perishable crops. An appropriation of $65,000 has been made available for the purpose. Other subjects which received attention are public abattoirs, transportation of live stock, organization and methods of the wholesale meat-packing industry, and local marketing of live stock and meats.

Surveys have been made of the marketing facilities for agricultural products in nine cities, and advice has been given regarding the location, establishment, and management of municipal retail and wholesale public markets. Detailed studies also have been made of local conditions in other cities.

Investigations concerning methods of handling and grading perishable products and the practicability of the standardization of the products and their containers have progressed rapidly. Tentative grades for sweet potatoes of Arkansas and Bermuda onions of Texas have been worked out and adopted by the local growers' associations.

Market News Service.

The value to producers of fruits and vegetables of the experimental market news service inaugurated in 1915 resulted in insistent demands for the extension of the work. During the past year telegraphic reports have been received from 33 important metropolitan markets and from officials of all railroads serving producing territory. The information thus secured has been furnished to growers, shippers, and distributors through 35 temporary offices in producing territories and 11 permanent offices in large cities. Statements from growers and shippers of tomatoes, strawberries, peaches, cantaloupes, watermelons, onions, grapes, apples, and potatoes indicate that the actual monetary saving due to a wider knowledge of market conditions has exceeded the cost of the service many fold.

The education of producers in the proper marketing of farm products, the avoidance of unnecessary losses due to diversions in transit, and the encouragement given to growers who desire to reach new consuming centers are some of the benefits resulting from this attempt to develop for the farmer a reliable business basis.

If new wheat, which is frequently damp, is thoroughly mixed with dry old wheat from the previous year and put into bulk storage for a few days, experiments of the department show the dry wheat absorbs a sufficient amount of moisture from the damp wheat to improve both kinds for milling purposes.

NEW ENEMY OF PEACH.

Entomologists Discover Destructive Insect near Washington, D. C.—Believed to Have Been Introduced from Japan.

An insect destructive to the peach and kindred fruits, believed to be new in the United States, has been discovered by entomologists of the United States Department of Agriculture in the District of Columbia and its environs. This insect, which in its adult form is a brownish moth and in its larval stage a small white and pink caterpillar, attacks both the tender shoots and fruit, causing serious losses.

Because of the habits of the worm, the usual control measures such as spraying with certain arsenates will probably not be effective. The smooth young shoots, owing to their rapid growth, are protected by the poison solution for only a very short time after the spray is applied, and hence it is almost impossible to poison them. The entomologists of the department who have been investigating the pest will continue to study it in the hope of developing control measures.

What the Insect Is.

The insect, known to science as *Laspeyresia molesta,* is believed to have been introduced from Japan. So far as the department's entomologists know, it has not been found in America other than in the District of Columbia and in the adjoining territory in Maryland and Virginia. The specialists are desirous of knowing if the insect has attacked peach, plum, or cherry trees elsewhere in the United States.

The presence of the insect can best be determined in most cases by the nature of its injury to peach trees. It bores into practically every tender twig and causes new shoots to push out from lateral buds. These are attacked in turn, the abnormal stimulation of lateral growth producing a much branched and bushy plant. A copious flow of gum from the twig ends often follows the attack of the caterpillars.

Injury to Fruit.

In attacking fruit the young caterpillars generally eat through the skin at or near the point of attachment of the fruit stem. The larva, as it grows, makes its way to the pit, where it feeds on the flesh, which soon becomes much discolored and more or less slimy. Larvæ entering at the side of the fruit are more likely to eat out pockets or cavities in the flesh.

The full-grown caterpillar spins a whitish silk cocoon in which to pupate. Moths emerge in the spring for egg laying by the time the shoots are well out.

The Bureau of Entomology, United States Department of Agriculture, especially requests owners of peach or other fruit trees to report the presence of this new pest in their orchards. Specimens of twigs may be mailed wrapped in paper or, preferably, in a suitable box.

IMPORTED TREE DISEASE.

Serious Outbreak of the European Poplar-Canker in the United States.

The poplars of this country are now threatened by a dangerous fungous disease which has evidently been imported in recent years from Europe. This disease attacks the twigs, limbs, and trunks of the black and Lombardy poplars (*Populus nigra*) and of the Carolina poplars or cottonwoods (*Populous deltoides*), and may be expected to attack other species of poplars and cottonwoods, in regions not yet investigated, according to the plant pathologists of the United States Department of Agriculture.

This disease is caused by the fungus *Dothichiza populea.* It appears first in the form of cankers or depressed dead areas in the bark much in the same manner as in case of the blight of chestnut trees, which is caused by a distinctly different fungus. The effect of the fungus on poplar and cottonwood trees is as follows: Cankers are formed in the point of attack, spread rapidly and often girdle the twig, limb, or trunk at the point of attack, killing the part above the canker. Trees attacked on the trunk become "spike topped." The death of limbs and twigs gives the trees a ragged appearance, which spoils their beauty, and later kills them. This is especially the case with black poplars which are frequently planted in rows along boulevards and avenues.

The European poplar-canker is more severe in its effect on stored and transplanted nursery stock. Trees when in transit, and when heeled in the ground, or freshly transplanted in the spring, are readily attacked by the fungus and ruined within a very short period of time. This disease is spread by means of spores produced in fruiting bodies in the form of small pimples or pustules in the bark of the cankers. From these pustules in springtime there are exuded small, sticky, cream-colored tendrils which soon change to a tawny-olive or even a walnut-brown. These tendrils contain millions of spores which spread the disease in various ways.

The fungus causing European poplar-canker was first found in Troyes, France, and described in 1884. In 1903 the first serious outbreak to be noted was reported and the disease described by the French pathologist Delacroix. An outbreak of the

disease in Italy was reported in 1907. This disease was first reported in America by a correspondent of the Plant Disease Survey in 1915, from Massachusetts and New Hampshire, but the causal fungus was not correctly identified. During the present year the pathologist of the department found the disease prevalent in small areas in certain districts in the following States: New Hampshire, Massachusetts, Rhode Island, Connecticut, New Jersey, Pennsylvania, Delaware, Maryland, Ohio, Nebraska, and New Mexico. The centers of infections appear to be in every case either certain nurseries now known to contain diseased trees, or points where poplars received from such nurseries have been planted. As this disease was not known in the United States till recently, it is evidently an imported one, and must be dealt with as such.

Additional information as to the extent of the spread of this new canker disease in the country is desired. Owners of diseased poplar or cottonwood trees may greatly assist if they will notify the Bureau of Plant Industry, U. S. Department of Agriculture.

POTATO QUARANTINE AMENDED.

Hereafter shipments of potatoes from the Dominion of Canada certified by the shippers to be as sound as is commercially practicable and to contain no more than 10 per cent of tubers showing traces of disease will be admitted at any port of entry of the United States, instead of at certain designated ports only, as in the past. The shipments, if accompanied by certificates of soundness as provided, will not be held by collectors of customs for inspection, except on special notification from the Federal Horticultural Board. An order amending the rules and regulations of the potato quarantine to this effect has just been issued by the Secretary of Agriculture.

Under the amended regulations the importer must apply to the Federal Horticultural Board for a permit for importation of potatoes as at present, designating the desired port of entry. The foreign shipper must enter the number of such permit on his certificate of soundness. The Federal Horticultural Board has prepared and will send to all applicants for permits forms for shippers' certificates of soundness.

Lime should be applied after plowing, and preferably three or four weeks before seeding alfalfa, in order that it may become from frequent harrowings thoroughly incorporated with the soil. It is often practical, especially when using ground limestone, to apply the lime to the crop preceding, in order that there may be time for it to become thoroughly available for the alfalfa.

FAT IN COOKERY.

How Any One of Several Commonly Used Food Materials May Be Substituted for Another.

Food materials differ in price with place and with season, and when a housekeeper wishes to follow a recipe she often finds that some of the ingredients called for are either too expensive or are very difficult to obtain. If she understands the composition of foods, she can often, under these circumstances, substitute some other material with good results. In order to do this, the housekeeper needs at least a general knowledge of the composition and properties of foods and is greatly helped by experience. In the main it is knowledge of foods and experience which free the cook from slavery to a recipe.

Experts in home economics at the United States Department of Agriculture have studied the matter recently with respect, especially, to the uses of fat in cookery.

For example, chicken fat or sour cream can often be substituted for part or all of the butter in cake making, but if this is to be done successfully the cook must know how much of either one it takes to supply the fat contained in the amount of butter for which the recipe calls. Cream contains more water than butter does, and rendered chicken fat usually far less, because it has been heated and the water which it originally contained driven off.

Egg yolks, which are rich in fat and which are often left over from cake making, may be used to enrich soups or may be combined with milk to make custards which resemble the cream in composition and can be used as cream is on desserts. Cheese is often added to soups or milk sauces to flavor them and also to make them richer in protein, but one should remember that it adds greatly to the fat also, and so the amount of butter should either be lessened or left out entirely, according to the amount of cheese used. It is convenient in these cases to know just how much fat is contained in an egg yolk or in a given amount of cheese.

Sometimes chopped nuts, which contain much fat, are added to recipes which did not originally call for them, with the idea of making the dish more appetizing. In this case also the nut fat should be taken into account, and the amount of butter or other shortening should be reduced accordingly; otherwise the dish is almost sure to be overfat.

It is easy to find out from bulletins published by the United States Department of Agriculture the percentage of fat in different food materials, and one can then compute the amount in a given weight of milk, cream, cheese, and so on. But the home cook does not usually weigh all her food materials, and still less does she like to do problems in arithmetic as a part of her baking. She measures her materials, using level teaspoonfuls, tablespoonfuls, and cupfuls, and uses them as her recipe or her general knowledge of cookery suggests. The more reliable data she has, the better results can she count on.

With these facts in mind, the following table has been made, which shows in housekeepers' terms the volume of fat in several commonly used food materials:

Amount of fat in various common food materials.[1]

Food material.	Quantity.	Fat content.
Whole milk	1 cup	About 2 level teaspoons.
Ordinary cream (18 per cent).	1 cup	About 3 level tablespoons.
Double or whipping cream (40 per cent).	1 cup	About 6 level tablespoons.
Butter	1 cup	14 level tablespoons.
English walnut meats (finely chopped).	1 cup, or 8 ounces.	Nearly ⅔ cup.
Peanuts (finely chopped).	1 cup, or 8 ounces.	A little more than ⅓ cup.
Chocolate	1 square, or 1 ounce.	1 scant tablespoon.
Cheese (grated)	1 cup, or 4 ounces.	2½ level tablespoons.
Egg	1	A little more than 1 level teaspoon.
Egg yolk	1	Do.
Egg white	1	Only a trace.
Egg yolks	1 cup	About 5 level tablespoons.
Egg whites	1 cup	¼ level teaspoon.
Vegetable oil or lard or drippings from which all water has been driven off by heat.	1 cup	1 cup.

[1] In making these estimates it is assumed that 3 level teaspoons make 1 level tablespoon, and 16 level tablespoons 1 cup.

An illustration of how the facts in the table may be used is given below. The proportions for a good cup cake, in which fat is supplied by butter and milk, are as follows:

⅔ cup butter.
2 cups sugar.
4 eggs.
1 cup milk (containing 2 teaspoons fat).
3½ cups flour.
4 teaspoons baking powder.

In this recipe a cupful of sour cream (18 per cent) can be substituted for the cupful of milk. It contains, as the table shows, a little more than 2 tablespoonsfuls more fat and, of course, correspondingly less water. The 2 tablespoonfuls of fat can be taken from the butter, which will reduce the butter to ½ cupful, and 2 tablespoonfuls of water can be added. The regular allowance of soda, ½ teaspoonful for a cupful of sour milk or cream, should be used and the baking powder reduced to 3½ teaspoonfuls.

This illustration will serve to show how a knowledge of facts will help housekeepers to use fats economically in cookery.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1916

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JANUARY 3, 1917. No. 22

POTATO DISEASES.

Show Tendency to Spread in Various Parts of the Country—Seed-Plot Method of Control.

Potato diseases, which are showing a tendency to become established or to spread in various parts of the country, can best be controlled in most cases through the adoption by farmers of the seed-bed method of control, according to Dr. H. A. Edson, truck-crop disease specialist of the U. S. Department of Agriculture. In discussing the potato-disease situation and possible control measures in a recent address, Dr. Edson said:

"A disease of the potato which is making its appearance in several sections of the country is the one designated by Orton as streak. The cause of this disease is unknown. It is characterized by the appearance of angular spots on the leaves, which have a tendency to run down the veins through the stems of the leaflets to the main petiole, or leafstalk, producing a streaked appearance. The affected portions of the plant wither and die, the leafstalks break over at the axil of the leaves—that is, their junction points with the branches—with the result that leaves hang directly down, swinging in the wind and attached only by a portion of the epidermis. In severe cases the plants are eventually entirely killed. The trouble is apparently transmitted from generation to generation by means of the seed tubers, and there is some indication that it is transmitted from plant to plant in the field. In the absence of more definite knowledge of the disease, it is recommended that roguing be practiced as a precautionary measure wherever it appears.

Heavy Loss from Mosaic.

"Mosaic is assuming great importance as a potato disease in certain sections of the country. It is characterized by a mottling in the green of the leaves, sometimes accompanied also by a crinkling but not a rolling of the foliage. The disease should not be confused with the uneven yellowing which results from the application of excessive water in irrigated regions nor with the somewhat different yellowing and rolling associated with excessive alkali content in soils, nor should it be confused with the condition of partial absence of coloring matter, possibly chimæra, seen occasionally in fields, more particularly in certain sections of the West. The cause of mosaic has never been determined, but it is known that the disease is reproduced when tubers from affected plants are used for seed. The experimental data which have been secured both in the United States and abroad show that the yield from mosaic plants is less than that from healthy plants of the same variety grown under the same conditions or in the same field. The average reduction in yield in trials made by the department with various varieties and in several different sections of the country is approximately 30 per cent. Roguing out affected plants in the seed plot affords a practical though perhaps not complete control of the trouble.

"The late blight of the potato caused by *Phytophthora infestans* and the rot of tubers which follows in the winter are too well known to call for description. It has recently been shown, however, that the planting of tubers affected with Phytophthora decay affords a means for infection of the growing crop. The development of the disease, however, is entirely dependent upon weather conditions. In dry seasons one may plant affected tubers without insuring the development of the late blight, but it has been shown that the original infections follow up the stems from the seed tubers if the weather conditions are favorable to the development of the fungus. It is, therefore, advisable to avoid infected seed when possible in addition to employing the usual control by Bordeaux mixture, which is a well-established practice.

"Recent studies upon the powdery scab have demonstrated the fact that this disease is less serious in its character in the United States than was at first feared. It is apparently unable to survive except in the more northern sections of the country, and the damage done there is, in many years, not serious. The disease is correlated with heavy, rather wet soils, or more particularly with subsoils of this character. The damage done is to a large extent dependent upon weather conditions even in these unfavorable types of soil.

Decay in Storage.

Several species of Fusarium are now known to produce potato diseases. These may be classified in two groups. The first is the wilt-producing group which attacks the vascular tissues and the root system of the plant, cutting off the water supply and

(*Continued on page 3.*)

THE NATIONAL FORESTS.

Returned Over $2,800,000 to the Treasury—Development of Roads—Relation to National Parks.

The following material dealing with the national forests is taken from the annual report of the Secretary of Agriculture:

The value of the national forests to the public and the use made of them increased steadily. Their returns to the Treasury last year, exceeding $2,800,000—an advance of more than $340,000 over the previous year—are only a partial indication of their service. An augmented volume of business, due to a larger number of timber purchasers, and a net addition of nearly three-fourths of a million to the number of stock grazed, together with a decided stimulus in prospecting and mining activities and in the use of the forests for recreation and health, are further indications of broadening development.

Through successful administration the permanence of the national forests is becoming more and more assured. They are now a vital part of the economic life of the regions which use their resources. It is increasingly clear that national supervision and control of them is necessary, and that they could not be abandoned without disastrous consequences to western industries and to local welfare.

Road Development in Forests.

The need for more ample provision for road development in the national forests was emphasized in my reports of the last two years. At the last session of Congress this urgent need received recognition through the enactment of the Federal-aid road act. This legislation constitutes one of the most important and far-reaching steps in national forest development which has been taken for a long time.

Eastern Forests.

By making provision for the continued purchase of forest lands in the East, Congress once more has recognized the permanence of the national forest policy. Three million dollars, expendable during the fiscal years 1917 and 1918, has been made available for this work. The purchase of lands in the Appalachian and White Mountains, with a view primarily to the control of stream flow

affecting the navigability of rivers, began in 1911. Under the provisions of the Weeks Forestry Act there have been approved for purchase 1,396,367 acres, at an average cost of $5.22 per acre. The lands are in excellent condition and have been secured at very reasonable prices. These newly established forests already are rendering important public service and are being used extensively. There is a marked demand for the timber upon them. The timber is cut in accordance with sound forestry practice. The White Mountain forest in a short time should return to the Government as much as it costs to protect and administer it.

Unwise Legislation.

Millions of dollars, appropriated by Congress for the improvement, development, and consolidation of the forest holdings have gone into the properties. Only on the assumption that the forests are to be permanent would expenditures of this character be justifiable. Abandonment of the work after it has been carried to its present point would be a stultifying course. Nevertheless, repeated efforts in this direction still are made. Measures of various kinds, which, if adopted, seriously would injure or even render ineffective the whole national-forest enterprise, are urged. The proposal that the properties be turned over in their entirety to the several States has a waning support and no longer needs to be taken seriously. On the other hand, efforts frequently are made to secure the abolition of individual forests. Proposals to do away with the forests in Alaska still find strong advocates. As pointed out in my last report, such action would be unwise and unfortunate. Action of this sort, however, can be met squarely on its merits, for the question of abolishing a national forest raises a clear-cut issue which the public can not misunderstand.

A more serious danger to the national-forest system lies in the repeated efforts to open them to the action of some general land grant or to the laws applicable to the unreserved public domain. Each year there are introduced in Congress numerous proposals designed to open the forests, or portions of them, to private acquisition or to disposition of one kind or another. One measure of this character passed both Houses of Congress during the last session and failed to become law only through the presidential veto. It proposed to open the forests to the acquisition of lands by any incorporated city or town for park and cemetery purposes and to counties for park purposes. Every public purpose of the proposed measure can be realized under existing law. So serious would be the effect of such a measure that, if enacted, undoubtedly it would be necessary within a few years actually to abandon a number of important forests. In his veto message, after explaining that the measure was entirely unnecessary and would have unfortunate public consequences, the President said:

"But the most serious objection to the bill is that it subjects the national forests to disposition under a general grant. At the very time while provision is being made for purchase by the Government of forested lands in the East for the protection of watersheds it is proposed to permit similar lands in the West to be permanently alienated. I would respectfully urge that it is unwise to permit alienation of the national forests under general legislation of this sort. If the process of piecemeal distribution is begun, independently of any oversight or control of the National Government, there is manifest danger that the forests will be so disintegrated as to make their efficient administration impossible and the purposes for which they were established unattainable. Against such a process the national forests should be carefully protected."

Recreation Use of the Forests.

The use of the national forests for recreation purposes continues to extend. Thousands of local recreation centers, public picnic and camping grounds, excursion points, and amusement resorts are being developed. Some of the areas, located near enough to cities and towns to be reached by considerable numbers of persons, serve already the purposes of municipal recreation grounds and public parks. To meet local needs along this line, the department is cooperating with municipalities. These forms of public service can be rendered without difficulty in connection with the fulfillment of the general purposes of the forests.

National Forests and National Parks.

The handling of the national forest recreation resources inevitably raises the question of the relation of the national forests and the national parks. At present there is no clear distinction in the public mind between the two. Both are administered for the benefit of the public along lines which overlap. The parks and forests occur side by side and have the same general physical characteristics—extensive areas of wild and rugged lands, for the most part timbered, with development conditioned upon road construction and similar provisions for public use. They differ chiefly in the fact that the attractions of the national parks from the recreational standpoint are more notable. Yet this is not always true. Several of the parks are inferior in their natural features to portions of the forests. The need of drawing a clear distinction between national parks and national forests and of a definite policy governing their relation is increasingly evident. Parks are being advocated where the land should stay in the forests, while elsewhere areas which should be made parks continue to be administered as forests—for example, the Grand Canyon of the Colorado.

A national park should be created only where there are scenic features of such outstanding importance for beauty or as natural marvels that they merit national recognition and protection and, on this account, have a public value transcending that of any material resources on the same land—such areas, for example, as those now comprised in the Yellowstone and Yosemite Parks and in the Grand Canyon National Monument. The areas should be large enough to justify administration separate from the forests and the boundaries drawn so as not to include timber, grazing, or other resources the economic use of which is essential to the upbuilding and industrial welfare of the country. In addition, when parks are created from parts of the forests, the portions remaining as forests should not be left in a form difficult or impossible to administer.

Clear-Cut Policy Necessary.

The importance of a clear-cut policy is evidenced by the efforts frequently made to secure the creation of national parks out of areas containing great bodies of timber, extensive grazing lands, and other resources, the withdrawal of which from use would be uneconomic and prejudicial to the local and general public interest. In most cases the desire for a specific park, where economic use of the resources also is essential, has led to the proposal for an administration of the area, after the creation of the park, identical with the present forest administration. Several such measures now are before Congress. Their enactment would result in a mere division of the public properties into parks and forests, having no distinction except in name; handled alike but by duplicate organizations in different departments. Still more serious is the fact that the cutting up of the forests would greatly cripple administration of the remaining lands. It would doubtless mean the abandonment of large areas which should remain under public ownership and control for timber production and watershed protection. It would greatly reduce efficiency in forest fire protection and in the handling of current business, increase the expense of protection and administration, and cause endless confusion to users, who in many cases would have to deal with two departments in developing resources when, for instance, logging and grazing units overlap.

The protection of the scenic features and the development of the recreational use of the lands is being taken care of in the national forests. Some of the most unusual scenic areas in the forests are best suited to a full park administration. The bulk of the forest areas, however, should continue in their present status, where they will be fully protected and developed for recreation purposes as a part of the forest administration. The extensive road building, made possible

by the $10,000,000 recently appropriated, will open them up rapidly.

An added cause of confusion is the fact that national parks and national forests are administered by two executive departments. While there is an effort to cooperate, nevertheless difficulties arise which could be wholly avoided if they were under one department. Unquestionably the administration of the forests should remain in the Department of Agriculture, because of the close relationship of the work of the Forest Service to the activities of other bureaus of the same department, such as the Bureau of Plant Industry, Bureau of Animal Industry, Office of Public Roads and Rural Engineering, Bureau of Soils, Bureau of Biological Survey, and the Bureau of Entomology. Obviously, there are in the forests many problems relating to live stock, plant growth, predatory animal and insect control, soil conditions, and road and trail work. These great bureaus are directly and intimately concerned with these problems. If the forests were transferred to another department, that department either would have to duplicate these bureaus in part, or would have all the difficulties of cooperation with another department which seem to be inherent. Whether the National Park Service should be transferred to the Department of Agriculture is a matter for consideration. If the transfer should be made, it would be unnecessary, and, in my judgment, unwise to consolidate the work of the two services. The park service should take its place in the organization of the department as an independent bureau, with its activities closely related to those of the Forest Service. Certainly, if the two services are to be administered by different departments, there should be the closest cooperation throughout. Such cooperation should include not only the question of the creation of new parks out of national forests, but also fire protection on contiguous properties, game preservation, road building, and other activities.

POTATO DISEASES.

(Continued from page 1.)

causing injury in proportion to the extent of the invasion. In extreme cases a yellowing, or at least an unhealthy green color and a characteristic rolling of the foliage develop to be followed by sudden wilting and death. The tubers produced upon infected plants frequently carry the fungus in their vascular tissue, as may often be demonstrated by the appearance of a darkened ring near their stem end. Infected tubers, stored under unfavorable conditions, may develop a serious decay, which is either of the wet or the dry type according to the temperature and moisture. The second group includes other species of Fusarium, which are to be classified as wound parasites. They infect the tubers through wounds resulting from handling while digging or storing. The infections may occur in the field or in the storage houses. These forms of decay may be controlled to a large extent by regulating the storage conditions. The stock should be stored at low temperatures (34° to 40° F.) in well-ventilated houses. Our knowledge of Fusarium wilt diseases has not reached a stage where directions for the satisfactory control of the vascular parasites can be given. It is possible, however, to improve the conditions by crop rotation and by careful selection of the seed stock. Tubers produced on infected plants are likely to carry the disease, hence such progeny should never be used for seed. Disease-free seed, however, can not be depended upon to produce a healthy crop on infected soil.

Black Leg Caused by Seed.

"Black leg is a disease which, so far as is known, is entirely seed-borne in its character. In typical cases affected plants die in the early part of the season as the result of a black, relatively dry, decay of the stem which originates at the base where the plant comes in contact with the parent tuber. During the early stages of the disease the leaves roll and the plant assumes a more or less stunted and bushy appearance. In other cases the disease progresses less rapidly so that the plants may arrive at full growth without showing evidence of infection. In some cases the disease is confined to the pith of the stem, not showing at all at the surface. Plants affected by this delayed type of black leg produce tubers which, however, are more or less seriously infected. It is stock of this sort which perpetuates the disease. All of the evidence accumulated to date indicates that the bacteria are unable to live in the soil even during a single winter. These organisms are especially susceptible to drying and are also readily killed on the surface of seed potatoes by common disinfectants, such as bichlorid of mercury. The roguing out of diseased plants from stock intended for seed is one of the most effective means of controlling black leg. This practice, coupled with treatment of the seed with bichlorid of mercury according to the method recommended by Morse, affords an almost complete control.

Rhizoctonia and Black Scurf.

"Rhizoctonia, the cause of the well-known black scurf of potatoes, is also frequently responsible for injurious diseases of the growing plants. It is very generally distributed in all agricultural soils and has recently been shown to be a normal inhabitant of virgin lands. Its parasitism upon the potato appears to be correlated with conditions of environment. Generally speaking, those types of environment which are unfavorable to the potato and which consequently weaken its vitality or lessen its vigor may be expected to result in increasing the injury produced by Rhizoctonia, since the fungus itself seems capable of thriving in all types of soil and under all conditions of climate. The most common type of disease with which Rhizoctonia is associated are the killing back of the sprouts of young plants in the spring, which may be spoken of as a damping off, the production of lesions or damaged spots upon the underground stems and upon the stolons, which carry the tubers, and in severe cases the production of a dying of the external tissues of the tuber. The lesions upon the stems are frequently present without apparent injury to the vigor of the plant or the amount of yield. The injury produced is dependent upon the depth to which these lesions kill the tissue.

"The conducting elements in the potato stem are located in a vascular ring, the center of which contains the xylem, or that portion of the conducting tissue through which the materials taken up by the roots are conducted to the above-ground portion of the plant. On either side of the xylem are the phloem strands, through which the elaborated food materials are conveyed from the leaves to the tubers. Whenever lesions penetrate into the tissues far enough to produce the death of these conducting cells, the communication between the leaves and the roots is interrupted and the injury to the plant is proportional to the amount of interruption. The lesions upon the stolons produce an injury in a similar way, cutting off the communication between the leaves and the growing tubers, making it impossible for starch to be conveyed to them as it is elaborated day by day. Superficial lesions cause little injury, but deep lesions make the deposit of starch in the tubers in a normal way impossible, and frequently result in the production of swollen internodes or aerial tubers or the formation of small tubers on new stolons developed on portions of the stem above the lesions.

"Curly dwarf is a disease characterized by the foreshortening of all of the portions of the potato plant above the ground, frequently accompanied by a crinkling of the leaflets. The whole effect is to produce a stunted, more or less rosetted plant, of which the yield is greatly reduced or frequently nil The cause of curly dwarf is unknown, but it appears to be physiological. The progeny of curly dwarf plants invariably produce curly dwarf, and it is usually true that affected stock runs out entirely and is lost in a few years.

Cause of Leaf Roll Unknown.

"Leaf roll is another disease of the potato which has been believed to be physiological. This is characterized by an upright habit of the tips of the stems, by a tubular rolling of the leaves of a portion or of the entire plant, frequently accompanied by a discoloration most pronounced at the margin of the leaflets. The character of this

discoloration varies with the varieties from a light yellow to a deep purple. The petioles of the leaflets of leaf-roll plants are frequently twisted so that the underside of the leaf is turned outward or upward. There is often a metallic luster of the leaflets most noticeable from beneath, the tissues are more brittle than normal, and are exceptionally rigid. The dull rustle given out by shaking the leaves of such plants against one another has led to the application of the term 'rattles' in some sections. The cause of leaf roll has never been determined. It has been generally believed, both in this country and abroad, that the progeny of leaf-roll plants could not produce healthy stock. It is certainly the case that leaf-roll progeny frequently does reproduce its like, so that it is inadvisable to employ such stock for seed purposes.

Control in Seed Plot Most Practical.

"Aside from the specific means of control which have been mentioned, the most practical method of combating the diseases discussed is probably that of the seed plot. For this purpose the farmer employs in the first year the best stock available, planting it upon his best soil type, and caring for it in the most approved manner. From time to time during the growing season the weak, diseased, or otherwise undesirable plants are rogued out. At digging time it is highly desirable to harvest at least a portion of this field by hand, selecting those hills whose yields approximate most closely to the grower's ideal. Tubers obtained in this way form the nucleus for the next year's seed plot. If this method is followed consistently, many of the diseases which are now so vexatious will be largely held under control, and in addition the general vigor and consequent productiveness of the stock will be held at a high level."

SHIPPERS VIOLATE LAW.

The officials in charge of the enforcement of the Food and Drugs Act report that inspectors have found several interstate shipments of packages of fruits and vegetables such as grapes, tomatoes, and berries which contain no statement on the packages as to the quantity of contents. The net-weight amendment to the Federal Food and Drugs Act requires that all packages of foods which are shipped into interstate or foreign commerce must be marked plainly and conspicuously with a statement of the quantity of the net contents either by weight or measure. Shippers who violate the law by failing to mark the quantity of the contents of each package of fruits and vegetables they ship into interstate commerce are liable to criminal prosecution. Several shippers have already been cited to hearings under the Food and Drugs Act for violating its provisions in this respect.

HOME ECONOMICS FUNDS

Three-fourths of a Million Dollars Available for Extension Work Among Farm Women.

That the carrying into effect of the provisions of the cooperative extension act has had widespread influence in bringing the knowledge and information of the State colleges of agriculture to women on the farms is evident from the following statistical statement:

During 1914–15 the total amount spent in home economics demonstrations was slightly over $320,000, while in 1916–17 over $750,000 was allotted to this work, an increase of over 130 per cent in two years. This money was derived from the United States Department of Agriculture, the State colleges of agriculture, Federal and State cooperative extension act funds, and county and other local sources. In 1916 the allotment of funds for extension work for farm women was derived from the following sources: $107,000 from funds appropriated directly to the United States Department of Agriculture, $260,000 from Federal extension act funds, $120,000 from State extension act funds, $32,000 from direct State appropriations in addition to the amount appropriated by the State to offset the Federal cooperative extension funds, $178,000 from county appropriations, and $80,000 from college and other miscellaneous sources.

A part of this money was used to employ women county agents. The number of counties with women agents has increased during the last three years from 279 to 478. In addition there were employed a large number of home economics specialists and supervising agents having a field larger than the county. In 1915–16 the total number of

Women county agents and funds available for extension work among farm women.

State.	1914–15		1915–16			1916–17	
	Number of counties with women agents July 1, 1914.	Funds for home economics work.	Number of counties with women agents July 1, 1915.	Total number of women extension workers.	Funds for home economics work.	Number of counties with women agents July 1, 1916.	Funds for home economics work.
Alabama	18	$16,156	19	39	$19,510	27	$28,870
Arizona				1	1,558		1,100
Arkansas	15	11,262	20	37	20,767	34	44,628
California				(1)	2,626		5,000
Colorado		3,752		3	3,250	2	3,334
Connecticut				1			2,600
Delaware		643		1	1,899		2,100
Florida	24	22,211	27	33	32,135	30	40,373
Georgia	29	14,222	48	54	28,321	54	53,500
Idaho		3,044		5	3,450		4,200
Illinois		2,978		3	15,450	1	16,200
Indiana		4,780		7	4,000		4,700
Iowa		19,052		9	28,800		31,930
Kansas		6,897		8	9,236		12,351
Kentucky	9	15,732	19	35	19,056	35	26,250
Louisiana	13	9,058	13	22	13,640	16	22,805
Maine				1	1,425		2,966
Maryland	5	4,102	6	13	11,230	7	12,880
Massachusetts		4,636		4	4,667	1	4,888
Michigan		1,518		5	4,474	1	7,000
Minnesota		4,756		(1)	7,715		8,390
Mississippi	33	18,553	33	38	25,964	38	34,288
Missouri				3			8,500
Montana		1,804		2	5,700		5,600
Nebraska		5,057		5	4,950	1	7,600
Nevada		1,844		1	1,050		914
New Hampshire		978		4	2,150	1	5,600
New Jersey		1,774			4,099		4,800
New Mexico		1,474		3	2,300		2,400
New York		5,050		4	6,250	1	15,075
North Carolina	27	25,719	34	38	43,265	48	53,623
North Dakota				4	5,300		7,990
Ohio		12,760		9	16,400	1	19,495
Oklahoma	19	11,123	24	29	24,095	30	30,076
Oregon		4,016		12	3,150		3,835
Pennsylvania		1,767		2	6,060	1	7,300
Rhode Island		1,667		1	1,925		1,600
South Carolina	21	20,565	24	38	41,390	32	54,837
South Dakota		2,112		(1)			1,685
Tennessee	18	12,231	24	40	25,554	34	43,092
Texas	26	17,040	27	37	24,288	39	36,920
Utah		2,191		6	5,287	2	5,825
Vermont				1	2,500		2,700
Virginia	17	15,438	22	25	24,337	28	33,357
Washington		2,429		3	3,002		4,300
West Virginia	5	7,630	10	12	13,946	14	17,413
Wisconsin				4	9,000		8,160
Wyoming		2,958			2,800		2,950
Total	279	320,979	350	602	538,061	478	755,990

[1] No data.

home economics extension workers was 600, of whom 350 were women county agents, the others being the supervising agents and home economics extension specialists of the State colleges.

DANGER IN RAW PORK.

Serious and Often Fatal Disease, Trichinosis, Due to Eating Uncooked Meat.

Eat no pork or pork products unless they are cooked if you would be certain of avoiding trichinosis. This is a warning issued by the Bureau of Animal Industry of the United States Department of Agriculture, especially to those who are in the habit of eating raw ham or special forms of sausage containing raw pork and made to be eaten uncooked. The records show that the number of cases of trichinosis—a serious, painful, and often fatal disease resulting from trichinæ—increases during the holidays, partly because of hog-killing time and partly because farmers frequently make up special forms of sausage which are eaten without cooking.

To avoid trichinosis no form of pork in the raw state, including dried or smoked sausages and hams, should be eaten. All pork used as food should be cooked thoroughly, as trichinæ, the minute organisms which cause this deadly disease, die and therefore become harmless when subjected to a temperature of 140° F. or higher. The fact that these organisms may remain alive and active in uncooked pork makes the latter, say department meat specialists, a menace to life and health wherever it is eaten.

Everyone should remember this simple rule of food hygiene: Cook pork well. A practical rule is to cook pork until it has lost its red color throughout all portions, or, if a trace of this color is still present, at least until the fluids of the meat have become more or less jellied.

The Federal meat inspectors do not inspect pork or pork products to determine the presence or absence of the organisms causing trichinosis, as even careful microscopic examination is unreliable. In inspected establishments the inspectors do, however, require that pork which is to be made into products to be eaten raw shall be heated sufficiently or subjected for considerable periods to extreme cold to destroy the harmful organisms. This requirement does not reach all pork products made to be eaten raw, since the Federal Government inspects only establishments preparing products to be shipped in interstate commerce.

It should be noted that the special treatment required by the Bureau of Animal Industry to be given to pork products meant to be eaten raw must not be interpreted as an indorsement of such dietetic practices. The measures are taken primarily to reduce the risks taken by persons who ignorantly, carelessly, or willfully eat such products. It remains that the safest plan is to eat no pork products of any kind raw.

IDENTIFICATION OF GRASSES.

To assist those who have occasion to identify grasses or small-grain seedlings by their vegetative characters, the United States Department of Agriculture has recently issued Department Bulletin 461. In this bulletin the author, Lyman Carrier, agronomist of the Bureau of Plant Industry, discusses the differentiating characters of grass seedlings, supplies an analytical key, and gives detailed descriptions and pen drawings of 48 seedling grasses and 8 small-grain seedlings. These include most of the common hay, pasture, lawn, and weedy grasses of the eastern part of the United States.

While the bulletin is somewhat technical, all terms are so explained and illustrated that anyone with a little practice may make use of it, even if not familiar with botanical language. It should prove especially interesting to students of botany and farm crops, as well as those who care for lawns and pastures. Many of our common grasses may be identified just as positively, and far more easily, by their leaves and other vegetative characters as they can by their flowering parts.

POTASH FROM KELP.

In 1911 the Bureau of Soils was authorized by the Congress to make a survey of the Nation's resources in fertilizer materials, particularly in potash, for which this country was entirely dependent upon the German mines. As a result of this reconnoissance it became evident that the largest and most immediately available source of potash in this country was the giant kelps of the Pacific coast.

As a result of the department's investigations and the prohibition by Germany of the exportation of potash salts American manufacturers have erected eight large plants in southern California for the extraction of potash from kelp. On September 1, 1916, about 125,000 tons of raw kelp had been harvested and treated, yielding approximately 10 per cent of dry kelp.

The plants now in operation, owing to the present abnormal prices for potash, are devoting relatively little attention to the elaboration of processes for the recovery of by-products. If this situation continues, they probably will not be able to produce potash at a profit when conditions become normal. In the circumstances it seems desirable for the department to demonstrate the commercial feasibility of producing potash and by-products from kelp with a view to put the industry on a sound economic basis. Plans have been formulated for erecting and operating, at some advantageous point on the coast of southern California, a plant with a daily capacity of not less than 200 tons of raw kelp, in order that the necessary experiments may be conducted.

It is hoped that these experiments will result in the establishment of a potash industry which will prove profitable and permanent and render this country independent of foreign sources in normal times.—Annual Report of Secretary of Agriculture.

The public roads of the United States outside the limits of incorporated towns and cities had, January 1, 1915, a total length of about 2,452,000 miles, of which about 277,000 miles, or 11.3 per cent, are improved with some form of surfacing. The mileage of surfaced roads is increasing at the rate of about 16,000 miles per annum.

GRAZING CROPS FOR POULTRY.

[Adapted to the latitude of the southern boundary of Pennsylvania.]

Crop.	When sown.	Seed per acre.	Grazing period.	
			Stage.	Duration.
Peas and oats	About Apr. 15	1 bushel peas, 2 bushels oats.	About May 20	Until full grown.
Chard	May 10 to July 1	3 pounds	8 to 10 inches high	Until consumed.
Rape	Beginning Apr. 20	6 pounds	6 to 8 inches high	Do.
Red clover	Aug. 20	12 pounds	About May 15	Until fed down closely.
Turnips	do	3 pounds	Sept. 20	Until snow falls.
Buckwheat	May 10 to July 1	1 bushel	6 weeks	Until mature.
Soy beans	May 10 to June 10	do	12 to 15 inches high.	
Rye[2] and crimson clover.	Sept. 1	1 bushel rye, 15 pounds clover.	Graze early winter and spring.	
Sweet clover	Aug. 15 to Sept. 1	25 pounds	8 to 10 inches high	Until fed down or too tough.
Alfalfa	August	20 pounds	do	Alternate periods.

[1] Suggestions by the Division of Forage Crop Investigations of the Bureau of Plant Industry. This phase of the investigations has received little attention from the viewpoint of poultry grazing, especially as to the relation of number of fowls to area of crops.

[2] Winter wheat may be substituted for rye. Farther north substitute hairy vetch for crimson clover.

PEANUTS AS HOG FEED.

Profitable Method of Disposing of Crop—Other Feeds Needed for Hardening and Finishing.

The peanut, sometimes called "pindar" or "goober" in the South, is of growing importance for hog feeding in the Southern States. The underground nuts are usually harvested by turning hogs into the field when the nuts are ripe, allowing them to do the harvesting. It has often been demonstrated that the most profitable method of selling edible farm products is by feeding them to live stock. It is very unlikely that the Southern farmers will find a more profitable method of disposing of peanuts than by feeding them to hogs and finishing the hogs on other feeds to harden the flesh.

Meat packers have questioned the quality of the meat from peanut-fed hogs. Examination of the flesh of hogs fed exclusively on peanuts and succulent feed shows that it is not quite so firm in texture as corn-fed pork, and the shrinkage is somewhat greater. It is therefore advisable for the farmer to use some feeds which have a tendency to harden the flesh of the animals before slaughtering time. Corn is so high at present that it is not considered economical for this purpose. In some of the Southern States farmers have turned their attention to the use of sweet potatoes, velvet beans, and cowpeas for this purpose. Some farmers have planned a combination of these crops which has practically solved the problem of cheap feeds for hardening and finishing during the last 30 or 40 days of the feeding period.

In order to determine accurately the feeding value of peanuts for hogs, the Texas Experiment Station conducted a test in 1908 in which 6 pigs averaging 43 pounds at the start were fed exclusively on Spanish peanuts for a period of 91 days, the nuts being separated from the vines in order to ascertain definitely the quantity fed. The results of this test show that the quantity of peanuts required per 100 pounds of gain in live weight was only 296½ pounds. This remarkably good showing is emphasized further when we consider that the average results of tests at nine different stations in the United States show that 537 pounds of shelled corn were required to produce 100 pounds of gain, and that in no instance was less than 479 pounds required.

According to the foregoing figures, an acre of Spanish peanuts of a yield of 40 bushels, allowing 30 pounds to the bushel, would produce approximatly 405 pounds of pork, which, if valued at 7 cents a pound, would amount to $28.35. These results seem to be entirely in accord with those obtained by other Southern experiment stations that have made similar experiments.

Many of the oil mills throughout the South have been equipped to crush peanuts, so it is now possible to buy peanut meal and cake. Most of the oil mills manufacturing peanut oil use the same methods of grinding, cooking, pressing, etc., that are used for cottonseed oil, but a first-grade oil can not be made from cooked material. Cold pressing the peanuts with the hulls gives a high-grade oil, but relatively less of it, because it does not permit as thorough extraction of the oil.

There are two grades of peanut meal, one the peanut meal derived from hulled nuts, and another (peanut cake) made from the whole peanuts cold pressed to extract the oil. Henry and Morrison, in their book entitled "Feeds and Feeding," give the following analyses:

	Dry matter.	Crude protein.	Carbohydrates	Fat.	Nitrogen ratio.
	Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	
Peanut cake (hulled)	89.3	42.8	20.4	7.2	1:0.9
Peanut cake (unhulled)	94.4	20.2	16.0	10.0	1:1.9
Peanut hulls	90.9	.4	33.0	2.1	1:94.2

Peanut cake (unhulled) contains more fiber, due to the hulls, but also contains a larger percentage of fat. The hulls add little or no feeding value to the cake or meal, being very low in protein and fat. Most of the carbohydrates are in the form of fiber (75 per cent) and hence are very low in nutritive value for the pig.

There has been a widespread demand to know if the meat of hogs fattened on peanut cake or meal would be hard, firm, and free from the objections that are made to meat produced by feeding the whole peanut. To answer this question intelligently the authorities of the Texas Agricultural and Mechanical College and the North Carolina Agricultural College have been conducting experiments and have obtained some very interesting results. Mr. L. B. Brook, associate professor of animal husbandry at the Texas College, states that hogs fattened on peanut meal made satisfactory gains and that their meat was not soft. Prof. Dan T. Gray, of the North Carolina College, makes a similar report in which he states that peanut meal does not produce soft-bodied hogs which are objectionable to the packers and consumers. Hogs fattened on peanut meal will be accepted by the packers as hard flesh, whereas from hogs fattened on peanuts the packer will deduct about 1½ cents per pound on account of soft flesh. In some places mills are offering peanut meal for peanuts, pound for pound. The farmers can well afford to make this exchange, for the meal will add 1½ cents a pound to the value of the pork, less the cost of harvesting the peanuts, as compared with the peanuts fed whole.

The Bureau of Chemistry, U. S. Department of Agriculture, is conducting studies on the protein of the peanut and has found that it contains an abundance of basic nitrogen. This form of nitrogen is indispensable to the normal nutrition of animals and is contained in inadequate amounts in the common cereals from which most feeds are derived. Peanut press cake should therefore prove to be an easily accessible material to make such cereal foods more efficient. It is planned to continue practical feeding tests of this matter.

NEW FARMERS' BULLETINS.

The Fall Army Worm or "Grass Worm" and Its Control. No. 752.

Commercial Handling, Grading, and Marketing of Potatoes. No. 753.

Orchard Barkbeetles and Pinhole Borers, and How to Control Them. No. 763.

The Common Cabbage Worm. No. 766.

Dwarf Broom Corns. No. 768.

Losses from Selling Cotton in the Seed. No. 775.

BRIEF ITEMS.

The department has at Arlington Farm, Va., apparatus for testing different methods proposed for fixing atmospheric nitrogen.

Specialists of the department are at work at La Fayette, Ind., to determine the cause of the infection known in that locality as oat blast.

The soils of 571,463,680 acres, or 892,912 square miles, had been surveyed and mapped by the Bureau of Soils at the close of the fiscal year 1916.

On land that has been in an early maturing cultivated crop, such as potatoes, peas, sweet corn, or soy beans, no other preparation for alfalfa will be needed than necessary harrowings.

In its round trip nearly from pole to pole the Arctic tern covers 22,000 miles. Its daily journey is at least 150 miles, and this is probably multiplied several times by the zigzag twistings and turnings in pursuit of food.

In moist climates, such as the eastern United States, it is not easy to succeed with alfalfa except where the soil conditions are favorable. Marked success, however, has been obtained on certain soils in the South where the annual rainfall exceeds 50 inches.

Flint and flour varieties of corn frequently produce heavier yields than dent varieties under droughty conditions. They are unpopular, however, on account of the many small ears and the difficulty of husking. When harvested by animals this difficulty is overcome.

ECONOMY IN FOOD FATS.

Price Differences Depend Chiefly on Flavor and Color—Food Value of All Practically Equal.

Flavor and color have an important bearing on the prices which must be paid for the various edible fats used in the home, since all are regarded as wholesome when of good quality and practically the same amount of energy is derived by the body from each. The housekeeper, therefore, must decide usually what she is willing to pay for relatively superficial properties in the foods. These facts are pointed out in a recent professional paper of the U. S. Department of Agriculture, Bulletin 469, Fats and Their Economical Use in the Home, prepared by the Office of Home Economics of the department. In discussing the selection of fats for special uses the bulletin says:

In general it pays always to buy fats of such good quality that none will have to be thrown away through spoilage. In some instances a higher-priced article may be more economical in the end, as, for example, clean, sanitary butter, as compared to a cheaper but less sanitary product. In some instances, where taste or flavor only is involved, a less expensive table fat may answer quite satisfactorily the purpose of a more expensive one. For example, the chief use of table oils is as an ingredient of salad dressings, and when a characteristic flavor is not especially desired good grades of cottonseed and peanut oils, having a bland flavor, may be used when these are less expensive than the corresponding grades of olive oil.

Fats used for shortening—that is, in mixture with doughs, etc.—influence the appearance, flavor, texture, composition, keeping quality, and cost of the foods in which they are incorporated. In selecting shortening fats, flavor and odor are to be considered, but attractive appearance and color are of less importance, since in cooking these are usually masked. Other qualities being equal, those culinary fats are more economical and desirable which possess the best keeping quality; that is, the least tendency to become rancid. Also, for general use shortening fats give the best results if they are neither too hard nor too soft to be easily mixed with the other ingredients of the dough at ordinary temperatures.

Fats used as a medium for cooking in such operations as frying should be carefully selected, since they influence the flavor, appearance, and texture of the foods cooked in them, as is evident when one recalls the bad flavor imparted to fried foods by burned or rancid fat. Preference should be given to a fat which does not scorch too readily at the temperature most commonly used for frying. Experiments in the laboratory of the Office of Home Economics indicate that butter and lard scorch at a lower temperature than beef or mutton fats and cottonseed, peanut, or coconut oils. For this reason, therefore, the latter fats are preferable for deep frying, which requires high temperature.

Economical Use of Fats.

It is a waste, the bulletin points out, to use more fat than a good recipe calls for. It is well known that too much butter makes a cake soggy, while a salad dressing with too much oil tastes "fat." The following are additional examples of ways in which economy may be secured. It is more economical to stir butter into cooked vegetables just before they are served rather than while cooking, and the flavor thus imparted is more pronounced. Furthermore, if added before cooking much of the butter is lost unless the water in which the vegetables are boiled is served with them. Instead of adding butter to vegetables many people cook fat ham, bacon, or salt pork with them and relish the characteristic flavor thus imparted.

Saving Fats That Would Be Thrown Away.

Much fat may be saved by home rendering of the trimmings from fat meat. The following method of rendering fats, found to be very satisfactory in the laboratory of the Office of Home Economics, may be applied in the home. The fat is cut finely with an ordinary household meat chopper or sausage grinder and is then heated in a double boiler until completely melted. The melted fat is then strained through a rather thick cloth (medium fine huckaback, for instance) to remove the finely divided bits of tissue. The adavantage of this method is that since the material to be rendered is finely divided the fat separates readily from the inclosing tissue at a temperature very little above its melting point, and there is no danger of scorching it as in the older open-kettle method.

After the fat is rendered it must usually be clarified. A fairly successful household method for clarifying fats is as follows: Melt the fat with at least an equal volume of water and heat for a short time at a moderate temperature, with occasional stirring. Let the mixture cool, remove the layer of fat, and scrape off any bits of meat and other material which may adhere to the under side. Rendering or clarifying fat with milk gives quite satisfactory results in modifying odors and flavors. The procedure is as follows: To 2 pounds of fat (finely chopped if unrendered) add one-half pint of milk (preferably sour). Heat the mixture in a double boiler until rendered or thoroughly melted, stir well, and strain through fairly thick cloth. When cold the fat forms a hard clean layer, and any dark material adhering to the under side of the fat may be scraped off. Sour milk, being coagulated, is preferable to sweet milk, since the curd remains on the cloth through which the rendered mixture is strained and is thus more easily separated from the rendered fat, which has acquired some of the milk flavor and butter fat.

Undesirable odors and flavors can be decreased in intensity or removed, if not too pronounced, by heating the fats with a good grade of charcoal, and the method is applicable to fats which could not be satisfactorily treated by the method first spoken of. To each pound of chopped, unrendered fat add 12 pieces of clean, hardwood charcoal about the size of a walnut and render the fat in a double boiler as described above. Allow the charcoal to remain in the melted fat for about two hours and stir the mixture occasionally. It is necessary to strain the fat through flannel or other closely woven cloth to remove all the fine particles of charcoal. Rancid odors, if not too pronounced, may be satisfactorily removed by this method. If the odor is very pronounced, more charcoal is needed, and the mixture requires longer heating. It is interesting to note that the characteristic yellow color of the beef fat may be removed by this method, and a white, odorless fat secured.

Fats as Food.

Fats are not less digestible than other foods, as is generally believed, it is pointed out by the bulletin, but are, as a matter of fact, more thoroughly digested than the animal or vegetable proteins and the starch occurring in the ordinary mixed diet. Fats whose melting points are higher than the body temperature are less easily digested, however, than those having low melting points. The digestive disturbances often attributed to eating fat are probably due not so much to the inability of the body to digest the fat itself as to other factors, among the chief of which are bad cooking, overeating of foods containing fats, and rancidity. Close mixture of nonemulsifying fat with protein may cause digestive disturbances to some persons, since the fats form a coating about the protein and hinder the action of the digestive juices.

The number of edible fats in use has been greatly increased in recent years, the bulletin points out. Formerly butter, cream, and lard, and perhaps "meat drippings," were the only edible animal fats known to the average housewife. Now numerous cooking fats are made from vegetable oils or mixtures of vegetable and animal fats. The development of methods of treating liquid oils to harden them by the addition of hydrogen has added a number of cooking fats of the approximate consistency of lard to the

fats available for home use. Among the edible vegetable fats mentioned by the bulletin which are used for food purposes are olive oil, cottonseed oil, peanut oil, coconut oil, corn oil, soy-bean oil, and nut oils.

LIME-SULPHUR ANIMAL DIPS.

Convenient Formula for Preparing Solution Suggested by Department Specialist.

A convenient formula for preparing lime-sulphur animal dips, termed the 8–18–10 formula, is suggested, as a result of extensive experiments, in professional paper No. 451, The Chemical Composition of Lime-Sulphur Animal Dips, recently published by the U. S. Department of Agriculture. The experimental work was undertaken with the object of improving existing formulas so as to simplify the preparation and, if possible, lessen the cost of these dips. To accomplish these purposes the author recommends—but solely for use as an animal dip—the 8–18–10 formula; that is, 8 pounds of high-grade commercial quicklime, 18 pounds fine sulphur (either flowers or flour), with somewhat more than 10 gallons of water, boiled to a volume of 10 gallons at the finish. The time of actual boiling should be one hour. The theoretical ratio between lime and sulphur will be met by this formula if the lime is 98.3 per cent pure; therefore the formula as given is appropriate for preparing a solution for dipping sheep where any chance of an excess of lime must be avoided. If commercial hydrated (not air-slaked) lime is used the amount should be increased nearly one-third, say to 10.5 pounds. For dipping cattle the formula may be used on the basis of available calcium oxid if the analysis of the lime is known, or if not known the lime may safely be raised to 8.5 pounds, corresponding to 92.5 per cent available calcium oxid, possibly even to 9 pounds.

The finished solution, drawn off from the sediment, should theoretically contain 18 per cent (grams per 100 c. c.) of sulphid sulphur, but probably will contain somewhat less. It is, therefore, appropriate for dipping sheep at a dilution of 1 volume of concentrate to 9 or 10 volumes of water, and for cattle at a dilution of 1 volume of concentrate to 7 or 8 volumes of water. But in any event, since baths lose strength during dipping, it is very desirable to keep them at all times under control by means of a "field test."

It is pointed out that this formula does not necessarily apply to the making of highly concentrated proprietary solutions.

The bulletin, which is highly technical, contains in its 16 pages the results of a number of experiments on the effect of storing, and of varying the concentration and ingredients, which should be of interest to chemists and veterinarians.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

SPRING SEED GRAIN.

Farmers Cautioned to Reserve a Supply of Good Wheat for Sowing.

In order to insure themselves a supply of good seed grain for sowing next spring, farmers are advised by the U. S. Department of Agriculture to bear in mind the following information in regard to the seed situation.

Wheat.

Great Plains area.—The wheat crop of 1916 in the spring-wheat States of the upper Mississippi Valley was very badly injured by rust and other diseases. Not only was the yield much reduced, but the quality of the grain was generally very poor. Much of the grain is light in weight, shrunken, and doubtless contains many diseased kernels. Such grain is not good for seed purposes. Although plants may be produced from such seed, they are not likely to be vigorous, and many of them may be diseased, and these diseases will either cause their death before maturity or be spread to other plants, or both.

It is advisable, therefore, for farmers in this region to make sure promptly of a sufficient supply of good plump seed of adapted varieties, which will grow when sown. If plump, healthy seed can not be obtained, the seed that is available should be carefully screened and fanned to remove all those grains that are not good for sowing. In no case should the prevailing high prices tempt the farmer to part with his good seed wheat and cause him to rely upon shrunken and diseased seed for sowing. Such a course is likely to result in disaster to next year's crop.

Pacific coast district.—In the States of Washington, Oregon, and Idaho the spring-wheat crop was large and the grain of excellent quality. The tempting prices for wheat should not induce the farmer to sell what should be kept for seed, because no seed of varieties adapted to this section can be obtained elsewhere. The dry fall has curtailed the sowing of winter wheat and the acreage of spring wheat will be larger than usual therefore, and the demand for seed increased accordingly. It must be remembered likewise that the varieties of the Pacific Northwest are not suited to the northern Great Plains States.

Barley.

The barley crop for the past season in the United States was, for the most part, of very good quality and no unusual methods or precautions need be taken in seeding the 1917 crop, except in parts of the northern Mississippi Valley. In this region the early arrival of extremely hot weather caused a decided shrinking in most of the crop and for this region the bushel weight is very light. The germination of the lighter kernels is likely to be low and the barley should be well fanned before seeding, only the plumpest grain being used.

MILLIONS OF PUBLICATIONS.

More than 29½ million copies of new bulletins, pamphlets, circulars, reports, and documents were issued by the United States Department of Agriculture during the last fiscal year, according to the annual report of the Chief of the Division of Publications. Including the reprints of documents of earlier issues with the new ones, there was a total of 39,098,239 copies printed.

The total number of copies of Farmers' Bulletins printed during the year was 12,795,000. Of these, there were 62 new numbers, of which 3,640,000 copies were printed, and 9,155,000 copies were reprints of 284 old bulletins.

Notwithstanding the liberal free distribution of publications made by the department, sales by the Superintendent of Documents amounted to $22,277.84, the cost price of 327,381 copies.

"Canaries: Their Care and Management" is the title of Farmers' Bulletin 770, recently issued by the department. The bulletin gives instructions in detail as to the proper care, food, and management of canaries. Special attention is given to the control of parasites and the treatment of diseases. Copies of the bulletin may be had upon application to the United States Department of Agriculture, Washington, D. C.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JANUARY 10, 1917. No. 23

CORN GROWING.

Proper Balance of Moisture, Heat, and Fertility Necessary for Successful Culture.

There are certain fundamental requirements in moisture, heat, and fertility which everywhere govern corn yields. A change in the supply of one may make a change in another advisable. Thus, the moisture requirement varies with the amount of heat available. In addition to water and heat, soil fertility and seed also must be regarded among the chief essentials. No one of these can be said to be more important than another. Where all are abundant except one (as water, for example), this one becomes the limiting factor and methods of supplying it becomes the important means of increasing the yield. In short, the secret of successful corn culture is to maintain a proper balance of moisture, heat, and fertility.

Having laid down these essentials, C. P. Hartley and L. L. Zook, of the Office of Corn Investigations, Bureau of Plant Industry, in Farmers' Bulletin 773, Corn Growing Under Droughty Conditions, proceed to discuss in detail methods by which this balance can be maintained. The following facts are taken from this bulletin, recently published by the United States Department of Agriculture.

Corn, the authors point out, possesses characteristics which appear to make it adapted to drought conditions, and, on the other hand, has qualities which limit its possibilities as a crop for semiarid regions and call for special adjustments. In producing a given weight of feed or dry matter, corn uses less water than certain other crops, as oats, clover, and alfalfa. It is deep rooted and can, if necessary, draw water from a depth of 5 or 6 feet. In hot, dry weather the rolling of the blades reduces the loss of water. On the other hand, the heat requirements and peculiar flowering habits of this crop make it less adapted to semiarid regions than other grain or forage crops.

Corn makes its entire growth during the season of highest temperature, growing best when the thermometer registers 80° to 100° F. It can not grow in early spring or late fall, and its growth is retarded during the summer by cold nights or cool weather. It needs its greatest supply of moisture during the summer weeks when droughts are most likely and when rains are less effective because of losses from evaporation. In other words, the heat requirement of corn prevents growth at times when moisture conditions are likely to be most favorable, while lack of moisture frequently retards growth when heat conditions are most favorable. The problem, therefore, where heat is great and moisture deficient, is to store up moisture; and where moisture is plentiful and heat deficient, so to handle the soil as to prevent moisture from lessening unduly such heat as may be available.

In the case of corn, which differs in this respect from perfect flowering plants, the setting of seed and the filling of the ears are seriously interfered with by summer droughts. Corn has two kinds of flowers, the tassel or pollen bearer and the seed-forming or silk-bearing flowers. The pollen from one falling on the silk of the other is necessary to the development of grain. Droughty conditions often hasten the shedding of pollen, but delay the appearance of silks, with the result that the pollen is mostly wasted. If fertilization is prevented in this way, no amount of later rain can cause kernels to form or make a good grain yield. The corn crop is sometimes injured by hot winds that do less damage to such crops as alfalfa and the grain sorghums. The problem here is by the choice of planting time and the selection of early-maturing or late-maturing varieties to bring about the double flowering of the corn at times when drought is least liable to interfere with fertilization.

Everything corn gets from the soil is in liquid form, and the crop can not grow unless the soil contains moisture to spare.

In our semiarid regions the soils for the most part are fertile, and the limiting factor is either water or heat. Raising corn may be likened to raising steam in an engine. Too much water lowers the temperature, whereas too little water is dangerous. Growth can take place only while there is a proper balance between heat and water. The two must be in the soil at the same time. Water falling as snow or rain before heat is present should be stored in the soil. The boiler should be filled before the fire is started.

In northern sections and at high altitudes the lack of heat limits corn yields, while in southern sections it is the lack of moisture. Abundant soil moisture reduces soil heat—desirable in the South, but undesirable in the North. Far north a soil with a wet surface is usually a cold soil. Here the conservation of heat is more important than

(*Continued on page 3.*)

74419°—17

OUR FOOD SUPPLY.

Ways in Which It Can Be Maintained and Increased Pointed Out by Secretary of Agriculture.

In his annual report the Secretary of Agriculture described in some detail the situation in regard to the food supply of the United States. On this subject the report said, in part:

Interesting questions arise as to whether the domestic food supply of the Nation is keeping pace with the growth in population and as to what are the prospects for the future. The following table in this connection is illuminating:

Food supply of the United States.

POPULATION.

June 1, 1900	75,994,575
June 1, 1910	92,174,515
June 1, 1916	101,882,479

Item.	Production.	
	Total.	Per capita.
Meats: Beef, veal, mutton, and pork (pounds):		
1899	18,865,000,000	248.2
1909	19,712,000,000	213.9
1915	22,378,000,000	219.6
Dairy products:		
Milk (gallons)—		
1899	7,265,804,304	95.6
1909	7,466,405,384	81.0
1915 (estimated [1])	7,696,814,000	75.5
Butter and cheese (pounds)—		
1899	1,790,097,244	23.6
1909	1,942,378,069	21.1
1915[2]	.....	.....
Poultry products:		
Poultry raised (number)—		
1899[2]	.....	.....
1909	488,500,000	5.38
1915 (estimated)	555,500,000	5.5
Eggs (dozens)—		
1899	1,294,000,000	17.0
1909	1,591,000,000	17.3
1915 (estimated [1])	1,811,000,000	17.8
Fish (pounds):		
1900–1904	989,275,000	[3] 12.5
1908	1,046,541,000	[4] 11.6
1915[2]	.....	.....
Cereals: Corn, wheat, and rice (bushels):		
1899	3,333,868,710	43.9
1909	3,257,407,468	35.3
1915	4,094,986,999	40.2
Potatoes (bushels):		
1899	273,318,167	3.6
1909	389,194,965	4.2
1915	359,103,000	3.5
Sweet potatoes (bushels):		
1899	42,517,412	.56
1909	59,232,070	.64
1915	74,295,000	.73
Citrus fruits: Oranges, lemons, and grapefruit (boxes):		
1899	7,075,557	.093
1909	23,447,044	.254
1915 (estimated)	24,670,282	.272

[1] Based upon average annual increase, 1899 to 1909, as shown in census.
[2] No data available.
[3] Based upon population, June 1, 1902, 79,230,563.
[4] Based upon population, June 1, 1909, 90,556,521.

Food supply of the United States—Contd.

Item.	Production.	
	Total.	Per capita.
Orchard fruits: Apples, peaches, and pears (bushels):		
1899	197,455,620	2.6
1909	190,433,327	2.1
1915	304,683,000	3.0
Small fruits (quarts):		
1899	463,218,612	6.1
1909	426,565,833	4.6
1915 (no data available)	.....	.....
Sugar (pounds):		
1899	483,003,871	6.4
1909	1,688,390,143	18.3
1915	2,025,680,000	19.9

The statistics cover the past 16 years. Within this period the population of the Nation has increased, in round numbers, 26,000,000, or 33 per cent. The articles dealt with cover the more important parts of the diet of the people. Meats and dairy products constitute 37 per cent of the average diet, fish 2 per cent, cereals 31 per cent, Irish and sweet potatoes 13 per cent, and other vegetables 8 per cent. It is notable that, notwithstanding the very rapid increase in population, the production per capita of the commodities indicated, with the exception of meats and dairy products, has remained approximately the same or has increased.

The area from which vegetables are drawn constantly is increasing, and improved canning, marketing, and transportation facilities have made it possible to supply our large markets with vegetables in greater variety throughout the year. It is a well-known fact that the consumption of fruits and vegetables has increased considerably in recent years and that they constitute a larger and more important part of the permanent diet of the people.

With all the agencies now available for improving agriculture there is ground for optimism as to the ability of the Nation not only to supply itself with food but increasingly to meet the needs of the world.

Increasing the Meat Output.

To increase the meat production of the United States has been one of the principal aims of the department in recent years. This can not be accomplished in a day, but requires steady constructive effort over a period of years.

The activities of the department have taken two principal directions—(1) checking and eliminating diseases and parasites, and (2) increasing and improving stock raising by extending the industry where conditions are favorable and by pointing the way to better breeding and feeding.

The eradication of the southern cattle tick is proceeding more rapidly than ever before and is opening up for beef and dairy production a large territory. Within the past three years the quarantine has been removed from 106,810 square miles, making a total of 294,014 since the work was begun in 1906. More than 40 per cent of the original tick-infested territory has been cleared, and therefore the direct losses, originally estimated at $40,000,000 annually, are being greatly reduced.

The diseases known as sheep scabies and cattle scabies likewise are being eliminated rapidly from the Western States.

Hog cholera, always the cause of heavy losses throughout the country, is less prevalent this year than for many years. This is due, in marked degree, to the wise application of the protective serum devised by the department and to the demonstration work in 14 selected counties. In these counties there was an increase of 474,734 in the number raised and a decrease of 121,628 in the number lost, or a total gain of 596,362 hogs.

Contagious abortion in recent years has reached such proportions as seriously to threaten the cattle-raising industry. It strikes at the source by curtailing the production of calves. It has been studied by the department, and vigorous efforts are being made to advise stock breeders as to its nature and means of prevention and eradication.

TUBERCULOSIS OF FARM ANIMALS.

Tuberculosis probably is the most common, destructive, and widely disseminated of the infectious diseases of domestic animals, especially of cattle and swine. Its seriousness is emphasized by the fact that it is transmitted to human beings. This may be prevented in reasonable measure by the pasteurization of milk and the inspection of meat. There remains, however, the problem of eliminating the disease from farm animals in order to prevent losses estimated at $25,000,000 a year in the United States. This is the greatest problem confronting the livestock industry of the country. The disease can be prevented and some definite system of eradication should be inaugurated. Three undertakings seem practicable at this time.

Eradication from pure-bred herds.—The first is the eradication from pure-bred herds of cattle. It is not necessary to resort to compulsion. The department should be placed in position more fully to assist individuals who wish to undertake the complete eradication of the disease from their herds. It could apply the tuberculin test and, in case infected animals are discovered, advise and supervise their proper disposal or management. The ruthless slaughter of all tuberculin reactors is not necessary. Many of them may be safely retained under proper quarantine conditions and their offspring raised free from tuberculosis. This plan has the approval of the breed-record associations in general and of many individual breeders.

Eradication from hogs.—The second undertaking is the eradication of tuberculosis from hogs. The experts of the Bureau of Animal Industry believe that this would be relatively easy of accomplishment. Hogs do not convey the disease to one another to any appreciable extent. They contract it from cattle, chiefly in two ways—by being fed on nonpasteurized products from creameries and by following cattle of somewhat mature age in the feed lot and feeding upon the undigested grain. An educational campaign should be effective in removing these two sources of infection. It also may be desirable to have State laws requiring the pasteurization of skimmed milk and other products before they leave the creameries.

Eradication from restricted areas.—The third undertaking is complete eradication in restricted areas. The plan would be to select certain communities in which, after a thorough educational campaign had been made, the stock owners are willing to cooperate in eradicating the disease entirely from that territory. This would require the slaughter of infected animals and would necessitate reasonable indemnity for the animals slaughtered. The latter feature undoubtedly would require large expenditures.

DEVELOPMENT OF STOCK RAISING.

Experiments by the department, in cooperation with the State experiment stations, have shown conclusively that the South is well adapted to economical beef and pork production. It is beginning to take its place with other sections as a stock-raising territory. Numerous breeding herds are being established. The leading beef-cattle breeders' associations are featuring the southern trade, and two of them are holding sales in cooperation with the department. This work is not for the benefit of one section alone; the entire country will profit from the extension of meat production into new territory.

A study of growing beef animals in the corn belt shows that while the cost of producing calves is higher than is usually thought, the calves, as a rule, can be raised at a profit.

The boys' and girls' pig and poultry clubs are valuable agencies for enlarging the meat output, as well as for training and developing the coming generation of farmers. The pig clubs now have more than 21,000 members and the poultry clubs 8,500.

THE SHEEP INDUSTRY.

Normally the United States imports from about two-fifths to more than one-half of the wool required for domestic consumption. During the past three years importations have ranged from nearly 250,000,000 to more than 500,000,000 pounds each year, the average being over 300,000,000 pounds. The total consumption of lamb and mutton during the past 10 years has increased appre-

ciably. In the fiscal year 1907 more than 9,500,000 sheep and lambs were slaughtered at plants subject to Federal inspection. The number now averages about 13,000,000 per annum.

In some sections of the United States there has been a steady decline in sheep production since the earliest statistical reports. This has been true also in every other settled country except Great Britain. The explanation undoubtedly is an economic one. In general, the primary purpose of sheep growers has been to produce wool. This can not be attained profitably on high-priced land. Naturally, therefore, with the increase in land values there is a rapid decline in the number of sheep. In Great Britain meat has been the principal product and wool the by-product, and the sheep industry has flourished.

Waste land made productive.—If American farmers will follow the British custom, the industry can be put on a profitable and permanent basis. The greater number of sheep in Great Britain are raised in the hills and on land comparable to much of the "waste land" of American farms. The areas in this country, especially in the East and in parts of the South, now relatively little used, can profitably be devoted to sheep production if the farmers will secure the proper breed of sheep.

Sheep also can be made profitable on higher-priced land, as British experience shows. They compare favorably with other animals in economy of production. They require a minimum of expensive concentrated feeds. They exceed the other larger animals in the rate of maturity; lambs can be made ready for market at from four to six months. They make possible the economical and fuller use of labor. They are of assistance in keeping the farm free from weeds. The sheep farm is usually a weedless farm.

Extension of industry.—In the United States only one in seven farms of over 20 acres now supports sheep, with an average of one sheep of shearing age to 3 acres of land. The 300,000,000 pounds of wool now imported annually could be secured from 50,000,000 sheep, and this number could be added to our stock if a fourth of the remaining farms sustained one sheep for each 3 acres.

In 1914 the Animal Husbandry Division of the Bureau of Animal Industry and the Bureau of Crop Estimates canvassed crop reporters in 36 States in reference to sheep on farms. The replies indicated that the number could be increased 150 per cent without displacing other animals. It is to our settled areas, particularly in the Central, Southern, and Eastern States, that we must look for an increase in the number of sheep.

The Dairy Industry.

Dairy farming is increasing in almost every section of the country, largely because it is the most economical form of agriculture so far as soil fertility is concerned. Dairying also is growing because dairy products are an important part of our food supply.

Most of the cheese in this country has been made in the territory around the Great Lakes, where climatic conditions are favorable to the handling of whole milk. All the valleys in the Rocky Mountain section and a large area on the Pacific coast offer splendid conditions for cheese production. So, also, does the mountain section of the South, including parts of West Virginia, Virginia, Tennessee, North Carolina, South Carolina, and Georgia. Three factories have been established in one of these States and have been very successful.

Rigid selection, intelligent breeding, and skillful feeding are important factors in economical production. Cow-testing associations teach rigid selection and skillful feeding. Cooperative bull associations promote intelligent breeding. In cooperation with the various State agricultural colleges the department has greatly extended the work of these associations.

Production of Food Crops.

The production of food crops adequate to meet the consuming needs of the country and the export demand is a matter of large importance to the American people. Our potential agricultural resources in this respect are so varied and ample that there can be no doubt of our ability abundantly to supply our domestic wants, when climatic conditions are normal and the foreign demand is not excessive. One of the greatest agricultural needs, therefore, is the stabilizing of production.

Sharp fluctuation of yield and price from season to season tends to stimulate speculative and superficial farming and to discourage the systematic crop rotation and thorough cultural practice which are essential to an enduring and economically sound agriculture. It is obvious that, in large measure, stabilization of production must be brought about through the use of better adapted or improved crop varieties, more systematic and rational crop rotations, and improved agricultural practice generally, including, in many sections, larger attention to live-stock production.

As the principles of crop improvement are better understood and more generally applied, larger yields per acre should result. In addition, a great deal can be accomplished through increase of soil fertility and better cultural methods. Enough has been done in this direction by the State experiment stations and the department, and also by good farmers, to justify the expectation that considerably increased acre yields gradually will be brought about in a large part of the area adapted to the staple food crops.

Very destructive climatic conditions never occur in this country with equal severity throughout all the staple-crop regions. It is highly desirable, therefore, further to broaden the areas for these staples as far as experience and sound economics may warrant.

CORN GROWING.

(*Continued from page 1.*)

the conservation of moisture. Evaporation keeps the soil cool. Soil moisture rises to the surface to replace that which evaporates. Cultivation checks the rise of soil moisture to the surface, enabling the surface to dry more rapidly. The dry surface then becomes warm by taking in heat, which otherwise would have been wasted in evaporating water from below. Corn cultivated late in the afternoon may be frosted that night, while adjoining uncultivated rows escape the frost. The more rapid evaporation caused by recent cultivation first cools the surface, but as soon as the surface dries, the soil becomes warm quicker and the crop grows more rapidly than it would have done without the cultivation.

In northern localities, where lack of heat is a factor limiting corn yields, summer fallowing and moisture conservation tend to keep the soil cold and seldom give increased yields of corn. In southern localities, where lack of moisture is the limiting factor, summer fallowing and practices which increase soil moisture give increased yields of corn.

In the southern part of the Great Plains lack of moisture is the chief limiting factor. Ignoring special instances and speaking generally, every operation should be conducted in such manner and at such time as to enable the soil to take in and retain water. But just how and when is this to be done? Should the land be plowed deep or shallow; in the fall or in the spring? On what date should corn be planted, and how many times should it be cultivated?

These questions can not be answered correctly by rule or by averages. Each field of corn presents a combination of conditions which demand consideration in answering these questions. Time-of-planting tests conducted yearly for 100 years at a particular station might show that the highest average yield had been obtained from corn planted on May 10, and the next spring might be so unusually warm and forward as to warrant planting in April.

(The next article will deal with getting moisture into the soil and preparing land for planting.)

Although nearly 50,000,000 bushels of rye were produced in the United States in 1915, this is less than 3 per cent of the world's annual production of the crop. Nearly 80 per cent of the crop of the United States is grown east of a line from the boundary between Minnesota and North Dakota to the southernmost point of Texas.

THE SOY BEAN.

Thrives in United States—Of Importance as Source of Oil, Food Products, and Fertilizer.

The soy bean, which has reached a place of unusual economic importance in Asia and Europe as a material from which foodstuffs, cattle feed, fertilizer, and oil suitable for a variety of uses may be manufactured, should become increasingly important in the United States to both farmers and manufacturers. While the bean may be grown throughout the humid and semihumid sections of the South and in the southern portion of the corn belt, it thrives especially well in the cotton-growing regions. For this reason, according to a recent publication of the United States Department of Agriculture, Department Bulletin 439, it offers an excellent opportunity to the cotton planter for adjusting his farm plans to offset the damage to cotton inflicted by the boll weevil. On the other hand, since a valuable oil may be pressed from the beans in cottonseed-oil mills, and since boll-weevil activities tend to lessen cottonseed production, the growing of soy beans in the South should greatly interest the owners of oil mills. The production of soy beans in considerable quantities may, in fact, be needed in some seasons to keep the expensive equipment of the mills operating profitably.

From the farmer's point of view the existence of the many oil mills in the South and the probability that by furnishing a demand for soy beans these concerns will make the legume an important cash crop should greatly facilitate the introduction of the new product on a commercial scale. Soy beans should be of additional interest to farmers, since, as in the case of other legumes, their culture improves the soil. If a sustained demand for them can be built up, therefore, soy beans can be introduced advantageously into a rotation with cotton, furnishing at the same time a second important cash product and a soil-improving crop.

Development of Industry Begun.

The recognition of the possibilities of bringing about the production of soy beans on a commercial basis in the South is not based only on the economic importance of the crop in Asia, where its production on a large scale has been established for many years, or on the established market for the beans practically throughout Europe. Soy beans have been grown for forage in this country for many years, and their adaptability to a wide range of climatic and soil conditions has been fully demonstrated. In recent years the crop has been grown to an increasing extent for its seeds in eastern North Carolina. A large production of the beans in this section in 1915, together with the occurrence of a cottonseed shortage, led to the experimental pressing of a considerable quantity of beans by local oil mills. These experiments were entirely satisfactory, and the mills participating in them are now taking an active part in the development of this new industry with American-grown beans. Oil mills on the Pacific coast have been operating for several years with soy beans imported from Manchuria and have found a ready sale in this region for the oil, cake, and other products.

Culture of the Soy Bean.

The soy bean can be grown successfully on nearly all types of soil and has about the same range of climatic adaptation as varieties of corn. The growing and handling of the beans are accomplished almost entirely by machinery in this country, the ordinary farm equipment meeting all the requirements of the crop. In large bean-growing districts special harvesters for gathering the seed in the field are used quite successfully. The cost of production varies from $7.50 to $12 per acre, depending on the methods employed in growing and handling the crop. The market price per bushel of seed for sowing purposes varies in different sections, ranging from $1 in large seed-producing sections of the south to $2 and $3 per bushel in the Central and Middle Atlantic States. Yields of seed to the acre in various sections of the United States range from about 15 bushels of 60 pounds each in the Northern States to about 40 bushels in the northern half of the cotton belt. The average yield in eastern North Carolina is about 25 bushels, although many fields produce 35 bushels or more to the acre.

Climate plays an important part in yields and the oil content of the seed. Considerable differences occur in the oil content of soy beans grown in different localities. The same variety grown in Mississippi and Ohio, for example, yielded respectively 25.4 per cent and 17.5 per cent of oil. The soy bean lends itself readily to improvement by breeding, and experiments indicate the possibility of securing varieties of high oil content by selection.

NOTICE TO GRAIN SHIPPERS.

Shipments of Shelled Corn Between Non-inspection Points Must Be Reported to the Department.

Whenever any shelled corn is sold, offered for sale, or consigned for sale by any of the grades of the official grain standards of the United States for shelled corn, and is shipped in interstate or foreign commerce without inspection from a place in the United States at which there is no inspector licensed under the United States grain-standards act to another place at which there is no such inspector, the shipper is required by the rules and regulations of the Secretary of Agriculture under the act to send a report of such shipment to the Secretary of Agriculture, at Washington, D. C., within seven days. Failure to make the required report may subject the shipper to the criminal punishment specified in the act.

These facts are called to the attention of grain shippers by the Office of Markets and Rural Organization of the United States Department of Agriculture, because it believes that some shippers do not fully understand the requirements of the regulation.

The reports to the department must show the date of shipment; the kind of grain and its quantity; the grade by which it is sold, offered for sale, or consigned for sale; the points of shipment and destination; the name of the initial carrier; the car initial and number, or the name or other designation of the vessel, boat, barge, or vehicle in which the grain is shipped; and the name of the shipper.

CONTROL OF DOCK FALSE-WORM.

An apple insect pest which in its attack on the fruit somewhat resembles the codling moth is described in a new professional paper of the Bureau of Entomology, Bulletin No. 265 of the United States Department of Agriculture, by E. J. Newcomer. This green worm, known as the dock false-worm, is found throughout the northern section of the United States and is noticeably prevalent in the State of Washington. The insect feeds upon certain succulent plants such as the docks, knotweeds, and bindweeds. When these occur in an orchard the worm makes its way up the trunk of the tree and burrows into the fruit, causing it to rot. There can be little or no danger from this insect in clean-cultivated orchards or in orchards where its food plants do not exist. However, where a perennial cover crop such as alfalfa is grown, other control measures must be taken.

Efficient protection may be secured by banding the trees with cotton batting or with some sticky substance. In experiments by the department an 8-inch strip of cotton batting was placed about the trunk of each tree and tied with a cord about the middle. The upper half of the cotton band was then rolled down over the cord. Good results also were obtained by applying to the trunks of the trees a band of a commercial sticky substance one-eighth inch thick and 3 inches wide. The lower limbs of the trees should be kept well up from the ground, and any props used also should be banded. Bands should be put on in the latter part of August and left on until after the fruit is harvested.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JANUARY 17, 1917. No. 24

CORN GROWING.

Getting Moisture into the Soil for Good Corn Yields—Preparing the Land for Planting.

Corn gets what it takes from the soil in liquid form and, therefore, there must be moisture to spare. The actual number of inches of rainfall on a given field, however, is not alone a safe guide, especially in droughty regions, as much depends on the amount of water that is stored at different seasons; the amount that is wasted in run-off, evaporation, or seepage; and, finally, the amount actually made available to the root system of the corn. It has been estimated that a rainfall of 10 inches will be sufficient to produce a 50-bushel yield of corn, provided none of it escaped except through the plants. Even weeds, however, can not take over every bit of moisture and it is impossible under field conditions to prevent losses.

Corn specialists of the Bureau of Plant Industry, United States Department of Agriculture, in Farmers' Bulletin 773, therefore, caution corn growers in droughty regions (1) to plan their cultural operations so as to have the soil surface in best condition to take in water when rains are most likely to occur; (2) so to handle the soil that deep penetration may be secured; and (3) so to cultivate the soil as to store up heat and at the same time prevent excessive loss of soil water through capillary action and surface evaporation.

The ease with which soils take in, retain, or lose moisture depends mostly on their texture, physical condition, and surface slope, they point out. It is to the extent that cultivation can modify these factors that more water can be made available to the growing crop.

There are loose, open soils through which water pours as through a sieve, and there are tight, gumbo soils which swell when the surface is moistened and become practically waterproof.

Sandy soils take in water more readily than heavier soils; hence, less precaution is necessary to prevent run-off.

The greatest loss may be from seepage to depths beyond the plant roots. Manure and decaying vegetable matter check seepage and improve soils of this character. As corn roots penetrate 3 to even 6 feet deep, larger yields of corn are frequently raised on sandy soils in semiarid regions than on surrounding hard soils.

The heavy, hard, or close-textured soils require the most cultivation to keep them in proper condition so as to prevent moisture loss from run-off and evaporation. Unless the surface is kept broken or somewhat rough, but little water will be absorbed during hard rains and a greater loss will occur from evaporation. To maintain the surface soil in proper condition, cultivation is necessary soon after heavy rains. If cultivation is too frequent, however, so that the surface becomes too fine, moisture can not penetrate readily and blowing of the soil is likely to occur.

It is of great importance that moisture be made to penetrate several feet below the surface. In most soils this penetration is slow, and during hot, dry weather surface evaporation is great. Surface moisture can not penetrate a frozen soil. Summer and fall precipitation has time to penetrate several feet deep and be in a position to support a growing crop the next summer. While it is seldom advisable to waste a whole summer in storing moisture for a corn crop the next year, it is advisable to begin storing soil moisture as soon as the preceding crop will permit. The ideal seed bed for a good corn crop in semiarid regions is one with a loose, coarse surface and a subsoil well filled with moisture to a depth of several feet.

Preparing Land for Planting.

As lack of moisture, more than anything else, limits corn yields in droughty regions, the first question regulating each operation should be, "What will be its effect upon the soil moisture supply?"

The authorities state that while summer fallow frequently results in greater yields of corn, the practice has not proved practicable. They, therefore, advise beginning the preparation of land to prevent loss of moisture and to put the surface into condition to receive moisture as soon as the preceding crop will permit. Cultivation after the removal of the preceding crop is profitable if it stops or prevents a growth of weeds. But if the growing season is past, dead weeds may catch more snow than would be caught by a cultivated surface.

Fall disking, or listing, is usually beneficial in putting the land in better condition to prevent the soil from blowing, to hold the snow, and to prevent run-off. The penetration of moisture is slow, and when

(Continued on page 2.)

75006°—17

SAFEGUARDING FOODS.

Imports and Interstate Shipments Rigidly Inspected—Sanitary Control of Milk, Eggs, and Oysters.

In the enforcement of the Food and Drugs Act during the last year, U. S. Department of Agriculture officials analyzed 29,833 samples of foods and drugs offered for interstate shipment and for import. A physical examination was made of samples from 76,468 shipments offered for import. Of these foreign shipments, 6,353 were found to violate the law in some respects and were either excluded from the country or admitted only after the importers had relabeled them to comply with the law. Of the samples of domestic products analyzed, 3,535, either because of the nature of the product or because the label on it did not tell the truth, were found to be in violation of the Federal law. In 1,364 cases the department recommended to the Department of Justice that criminal prosecution be instituted against the manufacturers or that the goods be seized. In many cases where there was no evidence of intention to defraud, and where there was merely some easily remedied flaw in the wording of a label, the shippers, after being warned in hearings, voluntarily took steps which made their products fully comply with the requirements. In all, there were held 8,715 such hearings, many of which resulted in the prosecutions indicated and the gathering of evidence for a large number of additional cases, which will be forwarded to the Department of Justice.

The Bureau of Chemistry in its annual report also calls attention to the fact that through the system of Service and Regulatory Announcements now in use manufacturers are given due notice of the requirements and thus are enabled voluntarily to make their products conform to the law. In this way the Government achieves its purpose, frequently without entering into needless and very expensive litigation.

In the regulatory work special emphasis has been given to the control of drug products and foods liable to spoilage and pollution. These frequently constitute a serious menace to health. The food inspectors have been instructed to be particularly watchful for interstate shipments of bad eggs, milk, oysters, and spoiled canned goods, and

false and fraudulently labeled medicines and spurious, synthetic drugs.

Curbing Fraudulent Medicines.

Attempts to counterfeit or adulterate imported drugs have been more common since the recent high price and scarcity of many of these products encouraged their imitation. It is interesting to note that of the 1,036 cases terminated in the courts during the year, 198 were brought on account of the false and fraudulent labeling of medicines. In all of these medical cases, save five, the courts found for the Government, and this, it is believed, has exercised an important deterrent effect on the vendors of nostrums shipped from one State to another.

The work of controlling the fraudulent labels of medicines and mineral waters has been greatly strengthened by the establishment of a separate office to deal with these matters. At the request of the Secretary of Agriculture an officer of the United States Public Health Service has been detailed to take charge of this work. Moreover, through the close cooperation established with the foods and drugs officials of many of the States the department was able to direct the attention of the local authorities to the presence of spurious drugs in their States and, as a result, much of these fraudulent goods in the hands of local dealers and beyond the reach of the Federal authorities were destroyed by State and municipal officers who, in many cases, prosecuted those responsible for the local traffic.

Milk, Eggs, and Oysters.

The cooperation in the sanitary control of the milk supply of small cities described in the report for last year has been extended in Illinois, Iowa, Missouri, Kansas, Nebraska, and in New England. It is proposed to repeat this work year after year, extending it each year to new territory. In some localities bad conditions were found, due in the main to insufficient cooling and careless handling. Perhaps the best result of this work has been that it stimulated some of the local authorities to take up similar work independently so that definite permanent improvement of the milk supply of a number of cities has resulted. The cooperative work on the control of the shipment of decomposed eggs described in the report of last year has been extended to cover much of the territory in which shipments originate, so that eggs are now candled before shipment far more than formerly, and the spoiled eggs destroyed or fed to poultry and stock. At the same time information given to local officials has helped them to curb local traffic in eggs rejected in candling.

The Bureau of Chemistry, after making cooperative sanitary surveys of oyster beds, issued warnings against the interstate shipment of oysters from polluted and doubtful beds, and where these warnings were not regarded, undertook prosecutions. As a result, interstate shipment from such territory was stopped.

Other Adulterations.

The campaign against the sweating of immature oranges and immature grapefruit so as to give the immature fruit the color of ripe fruit has been successful, largely because of the active help of the greater part of the citrus-fruit producers. Comparatively few sweated, immature oranges were offered during the last year, and it is believed the better quality of fruit resulted in a steadier market, so that the producer, as well as as the consumer, benefited.

Other forms of adulteration not already mentioned that received especial attention are the adulteration of scallops and canned tomatoes with water, the substitution of colored starch paste for tomato sauce, the reprocessing of spoiled canned goods, the traffic in cull beans, in decomposed tomato products, in rancid olive oil, in wormy horse beans, the substitution of foreign fat for cacao butter in and the addition of cacao shells to cacao products, the adulteration of rice bran with rice hulls, the coloring of inferior macaroni and of plain noodles, the misbranding of domestic macaroni in simulation of imported goods, and the adulteration of oats with water or weed seeds.

OPINIONS ON STANDARDS.

New Publication Discusses Matters of Interest to Grain Trade—Forms for Certificates and Other Documents.

Opinions on matters of general interest to the grain trade arising under the United States grain-standards act, which became effective December 1, have just been published by the Office of Markets and Rural Organization of the United States Department of Agriculture, which has charge of the administration of the act. The opinions together with suggested forms for the grain-inspection certificates and other documents required by the act or the regulations thereunder, are contained in Service and Regulatory Announcements No. 15.

The opinions interpretative of the grain-standards act include discussions of the prohibition placed on the use of other terms than the official grade designations for grain shipped in interstate commerce, the requirements of the old and new grades for shelled corn, and the applicability of the act to import grain and shipments, part for interstate and part for intrastate commerce. Other matters discussed include inspection of shelled corn for export, the application of the act to small shipments, fees for licensed inspectors, the effect of the act on intrastate transactions, the interstate shipment of shelled corn without inspection, and the employment of licensed inspectors by grain elevators or warehouses.

The portion of the publication relating to forms contains, in addition to the approved form for grain-inspection certificates, suggestions for adapting present certificate forms for temporary use, suggested forms for designating agents in appeals and disputes, and the forms of grade memoranda to be issued by grain supervisors in connection with such appeals and disputes.

Copies of Service and Regulatory Announcements No. 15 may be obtained by interested parties on application to the Office of Markets and Rural Organization, United States Department of Agriculture, Washington, D. C.

CORN GROWING.

(Continued from page 1.)

rains occur evaporation is rapid from hard soil surfaces, such as usually follow the growing of small grain. The chances of storing moisture are increased by loosening such compact surfaces as early as possible. Whether plowing is necessary, however, depends very much upon the type of soil. Most heavy clay soils are best put in proper condition by plowing. Sandy or light loam soils should not be plowed in the fall and left bare during the winter in regions where soil blowing is likely to occur. If, however, it becomes advisable to plow such soils in the fall, blowing of the plowed area may be checked by top-dressing with barnyard manure.

Deep plowing should always be done in the fall or very early in the spring, to allow more moisture to penetrate and the soil to settle before planting time.

On sloping land the plowing, listing, planting, and cultivating should follow on a level along the slopes or around the hills.

The moisture saved makes this a profitable practice, and very often the prevention of run-off is necessary to avoid erosion, with the loss of the richest portions of the soil.

Alfalfa land to be prepared for corn should be fallowed one year or plowed early the previous summer.

Growing plants draw large quantities of water from the soil and subsoil. All growth of weeds and volunteer grain on land to be planted to corn should be prevented.

Deep plowing and subsoiling should be done in the fall rather than at corn-planting time. Soil put in the right condition to take in moisture to a considerable depth is also open to the air and dries out rapidly. If necessary to plow in the spring for corn, the plowing should be done early and should not be deep and the ground should be packed immediately. Plowing under several inches of snow is an effective and sometimes a practicable way of getting moisture into the ground.

SELECTING TABLE FOWL.

Methods of Determining Food Quality of Poultry Discussed by Home Economics Specialists.

The importance of age, sex, exercise, food, and care as influencing tenderness and flavor in poultry is pointed out by home economics specialists of the United States Department of Agriculture in a professional paper, Bulletin 467, just published.

There is much less difference, the bulletin states, in the digestibility or healthfulness of the meat of different kinds of fowls than is commonly supposed. Nearly all the nutrients and energy of poultry, as of other meats, it is pointed out, are utilized by the healthy normal body. In all kinds of poultry table quality depends primarily on tenderness and flavor, and these, in turn, are influenced by age, sex, exercise, food, and care. Freshness is also an important factor, but this is not merely a question of how long a bird has been dead, but rather of how far developed are the chemical and bacteriological changes which, when they are carried too far, cause what we call spoiling or decomposition in the meat. The microorganisms which cause dangerous changes are likely to be introduced by careless and dirty handling, and for this reason cleanliness should be insisted on. The changes take place most rapidly in the presence of warmth and moisture. Hence, cleanliness, cold, and dryness are at the bottom of all the methods of caring for poultry on the farm, in the warehouse, at the market, and in the home.

The methods of cooking poultry are, in general, the same as those for other kinds of meat. The tougher the bird the more cooking will be needed to make it tender and easily digested, and the larger it is the more heat will be required to cook it thoroughly. Canned and potted poultry are prepared in much the same way as freshly cooked dishes, then sterilized and sealed, and when properly put up do not differ essentially in food value from similar fresh foods.

General Considerations.

In regard to the general considerations to be observed in choosing poultry, the bulletin calls attention to the fact that while the relative cost of different kinds of poultry depends primarily on the price, the proportion of edible to inedible material and the thoroughness with which the edible portions can be utilized should also be kept in mind. Well-grown birds with good-sized masses of moderately fat flesh are more economical than either young or over-fattened ones. At ordinary retail prices, full-grown chicken is the only poultry which compares in real economy with the cheaper cuts of beef and pork, but young chicken, medium-sized turkey, goose, and guinea fowl are often as economical as the more expensive grades of other meats.

Use of Cold-Storage Poultry.

In discussing the use of cold-storage fowls, the bulletin says:

"The way in which frozen birds are thawed makes a great difference in the length of time they keep in condition. It used to be customary to thaw them by soaking in cold water, but this has been proved undesirable, not only because the water is very likely not to be clean but also because soaked birds 'go off' in quality very rapidly. Soaking in hot water, as is sometimes done in market for a 'rush order,' is even worse. A much better way is to keep the birds for 24 hours at ordinary ice-box temperature (45° to 50° F.). As has been already stated, the sooner the birds are used after thawing the better, and whenever possible should be bought stiff and thawed at home. This means buying poultry a day before it is needed, but it is the surest way of having it properly thawed. In warm weather it should be put in the refrigerator to thaw, but in cold weather a moderately cool room will do as well. If it is impossible to do the thawing at home, the marketman should not be allowed to do it until a short time before delivery.

"Although frozen poultry is hardly to be chosen when fresh birds are in the market, it undoubtedly has the advantage of furnishing chickens, turkeys, and other birds when the natural supply is lacking and thus increasing the variety of the meat list."

How to Recognize Good Table Poultry.

The following statement of the methods by which good table poultry can be recognized by the purchaser is made in the bulletin:

"In a freshly killed bird the feet feel moist, soft, and limber, and if it was dressed with the head on, the eyes look bright and full. As it becomes stale the eyes shrink and the feet dry and harden; when too stale, i. e., when decomposition is well under way, the body turns dark and greenish or becomes slimy. The flesh should be neither flabby nor stiff, but should give evenly and gently when pressed by the finger. It is very difficult to distinguish between good cold-storage and freshly killed poultry.

"One of the commonest ways of testing the age of dressed poultry is to take the end of the breastbone farthest from the head between thumb and finger and attempt to bend it to one side. In a very young bird, say a 'broiler' chicken or a green goose, it will be easily bent, like the cartilage in the human ear; in a bird a year or so old it will be brittle, and in an old bird, tough and hard to bend or break. Unfortunately there are sometimes tricky dealers who break the end of the breastbone before showing the bird, and thus render the test worthless. If the feet are left on the carcass, they furnish a mark of age. In a young bird they are soft and smooth, becoming hard and rough as the bird grows older. The claws are short and sharp in a young bird, growing longer and blunter with age and use. Spurs generally occur on male chickens. On male broilers and tender roasting chickens they are small; on older, higher-flavored ones they are prominent but flexible; on cocks they are long and attached to the bones of the legs; on capons they seldom develop until the second year of age.

"Turkeys up to a year old are said to have black feet, which grow pink up to 3 years old and then gradually turn gray and dull.

"The age of pigeons can sometimes be told by the color of the breast, which becomes more and more purplish as the bird grows older. Red feet are also said to be a sign of age in a pigeon.

"In ducks and geese the flexibility of the windpipe is a mark of youth. It can be easily squeezed and moved when the bird is young, but later grows rigid and fixed. If the tips of the quills at the end of the wing are sharply pointed the bird is probably young; the blunter they are, the older the bird.

Capons.

"When caponizing has been properly done, the head is small for the size of the body, the comb and wattles are pale and withered, the body plumper, rounder, and larger than in an ordinary fowl, and the spur abortive. If the operation was incomplete, the head will be like that of an ordinary bird and the body less rounded. Such birds, known technically as 'slip capons,' are much inferior to true capons."

GOVERNMENT FUR FARM.

An experimental fur farm has been established in northern New York by the biological survey of the department. At this farm the Government specialists expect to test many kinds of fur animals, foreign as well as native, as to their adaptability to domestication. One of the most important lines of work to be taken up will be that of developing improved strains by selective breeding. This farm is the outgrowth of experiments conducted with minks and martens during the past year at Linden, Md., and the National Zoological Park, D. C.

The Biological Survey has found that a number of ducks around Great Salt Lake, Utah, were suffering from lead poisoning as a result of swallowing the shot present in large quantities about the shooting stations and blinds.

JUDGING HORSE'S AGE.

Teeth Furnish Fairly Accurate Indication—Yearly Changes Which Ordinarily Occur.

Until a horse is over 10 years old the teeth furnish an indication of age which is fairly accurate. In estimating the age of a horse, only the three pairs of front teeth or nippers on each jaw are considered. Horses, like human beings, have two sets of teeth; the first set, known as milk teeth, being replaced by permanent teeth. New teeth have deep cups, or indentations, at their centers. As the teeth wear down these cups disappear.

A colt does not usually get its first pair of nippers until it is a few days old, but has all three pairs by the time it is 6 to 10 months old. Until a colt is 3 years old, however, its general appearance is relied upon largely to indicate its age. Following is a description of the yearly changes which ordinarily occur in the teeth of a horse.

One year.—The center pair of milk incisors, known as the pinchers, and the pair next to them, known as the intermediates, are well through the gums and in contact, but the corner pairs do not yet meet on a level.

Two years.—The pinchers and the intermediates indicate that they are being crowded by the permanent teeth, as they are pushed free from their gums at the base. By the time the colt is 2½ years old the middle pinchers should be through. The permanent teeth are much larger than the temporary ones.

Three years.—The middle pinchers are large enough for use. Their deep cups show plainly. The milk intermediates are about to be shed.

Four years.—The permanent intermediates appear at 3½ years and are ready for use at 4. The corner teeth give evidence that the permanent corners are coming. The cups in the pinchers are about one-third gone. (The tusks, or canine teeth, of male colts may appear about this time.)

Five years.—The temporary corner teeth are shed at 4½ and the permanent ones are ready to use. The horse has now what is known as a full mouth, all permanent incisors being ready to use. The cups of the first pair are about two-thirds gone.

Six years.—The cups in the center pair have nearly disappeared. In the second pair they are about two-thirds gone.

Seven years.—The cups from the second pair are now gone. There is a notch in the upper corner tooth where it overlaps the lower one.

Eight years.—The cups having all worn out of the lower nippers, we now look at the upper jaw. Although cups remain in the center pair, they are not deep.

Nine years.—The cups in the center pair of nippers on the upper jaw have disappeared. They are still present in the other two pairs, being fairly deep in the corner ones.

Ten years.—The cups are worn out of the second pair on the upper jaw, although they are still present in the corner pair.

Older horses.—At 11 years all of the cups are usually worn out of the incisors and it becomes necessary to use some other indication. Estimation of age may now be based upon the angle at which the teeth meet, their change in size and shape. As the horse gets older, the teeth meet more and more at an acute angle; that is, the jaws become more oblique. As the teeth wear down, the shape of the worn ends changes from oval to more nearly round and, finally, in an aged horse, to a nearly triangular form. Sometimes cups are cut or burned in the teeth of old horses to make their mouths resemble those of younger animals. This practice, known as "Bishoping," may be detected if the shape of the tooth and the absence of the ring of enamel which surrounds the natural cup are noted. After a horse is 12 years old its condition is more important than its age in determining values.

FEEDING VALUE OF PLANTS.

Bureau of Chemistry Reports Results of Research on Protein.

The recent annual report of the Chief of the Bureau of Chemistry, United States Department of Agriculture, shows that much work of a research nature has been done during the past year on the chemical composition of various cereals and other plants in order to form the basis for practical nutritive experiments. The proteins of the plants have been analyzed and new constituents discovered in some of them. The feeding value of plants has heretofore been estimated largely on the basis of the protein they contained. Investigations have shown, however, that the proteins in various grains and other feeds differ greatly in composition. Two cereals which contain approximately the same amount of protein may vary much in feeding value because the protein in one of the cereals contains certain constituents necessary to nutrition which are lacking in the proteins of the other cereal.

A new protein has been found in the nitrogenous compounds of kafir corn. The composition of this new protein has been determined. It contains the amino acids lysin and tryptophan, both indispensable to the normal nutrition of animals. These are not found in the proteins of maize. Now that this is known, the report states, a rational attempt can be made to learn how kafir may be fed to make it no less valuable than maize.

The peanut has been found to contain an abundance of diamino nitrogen. This form of nitrogen is indispensable to the normal nutrition of animals and is contained in inadequate amounts in the common cereals from which most feeds are derived. Peanut press cake should therefore prove to be an easily accessible material to make such cereal feeds more efficient, the report states. Practical feeding tests will be made in cooperation with the Bureau of Animal Industry.

The proteins of cotton seed, jack bean, tomato seed, cowpeas, corn, corn germ, and wheat have been determined and studied. Many analyses of forage plants of the arid and semiarid West were made for the Bureau of Plant Industry.

BIRD ACT STILL IN FORCE.

The United States Department of Agriculture has received inquiries from sportsmen in various parts of the United States as to the effect of the ratification of the treaty between the United States and Great Britain in reference to migratory birds upon the migratory-bird act of 1913 and the regulations issued thereunder. In response the department has made the following public announcement: In the opinion of the department, the migratory-bird act and regulations are still in force; also these will continue in operation, and the department regards it as its duty to enforce them, pending the enactment by Congress of new legislation for the purpose of carrying out the provisions of the treaty.

In general, alfalfa should be cut for hay when the young shoots at the bases of the plants first appear. If these new shoots become long enough to be cut off by the mower, the new crop may be badly damaged. The blossoms often appear simultaneously with the new young shoots, but blossoms alone are not a safe guide to the time for cutting.

The plantings of the Oriental timber bamboo in northern Florida and Louisiana have grown to a height of 25 feet, and there is no longer any question about their producing in this country good canes comparable to those which they produce in China and Japan. A quick method of their propagation has been worked out so that it will be now possible to supply large enough quantities of the young plants to set out many small areas throughout the South, from the Carolinas to California wherever there is sufficient moisture and the land is not too high priced to admit of their cultivation.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JANUARY 24, 1917. No. 25

NEW POTATO DISEASE.

Prevalent Last Season in Eastern Sections—Application of Potash or Manure to Soil Recommended.

A potato disease appearing on certain soils and apparently associated with the lack of potash in the commercial fertilizers used was prevalent last summer in various sections of the East. According to specialists of the Bureau of Plant Industry, United States Department of Agriculture, the trouble was largely controlled by the use of stable manure. The disease may be expected to appear again with increased severity during the coming season in many potato-growing sections, from Maine to Virginia, and probably also farther south. It was first noted in scattered fields in 1915. In 1916 it became serious and general over considerable areas. Last year the disease was first observed late in June in Maryland and Virginia, and during the latter part of July in Maine. The affected plants first develop a downward rolling of the leaf margins, accompanied by a peculiar bronzing of the surface, sometimes mistaken for spray injury. Since it occurs on unsprayed as well as on sprayed plants, it can not be due to the corrosive action of sprays. The foliage gradually turns brown—not yellow—and the plants ripen prematurely. Death of the leaves and sudden collapse of the stems at the ground level follow. The yield, of course, is much reduced.

The disease is found more commonly on fields of early-maturing varieties, but is not restricted to them. It also appears first on early planted fields.

What is more striking is the very apparent association of the trouble with certain soil types, at least in Maine, where this relation, as well as other features of the trouble, are being investigated by the department experts in cooperation with the Maine Agricultural Experiment Station.

Soils which originally supported the growth of soft woods, or "mixed-growth lands," developed the diseased condition in its most severe type, while the hardwood ridges showed it least or not at all. The trouble appeared first in the swales or lowlands, where the natural drainage was not so good as on the higher ridge land. When the disease appeared at all on the higher ground, it was of a less severe type.

Specific fungi are frequently found on the stems of the collapsing plants, and some of these most constantly seen belong to disease-producing groups. Their relation to the trouble is being investigated, but the present indications suggest that they are not the primary cause but have attacked the plants already seriously weakened by other agencies.

Fertilizer experiments in progress on affected fields demonstrated that the plots receiving potash showed little or no signs of the trouble, even where the other plots were entirely dead. Stable manure also held the disease in almost complete control.

Investigations of the trouble by the department are incomplete, but the present indications are that it is due to insufficient potash, or, perhaps, in some soils at least, to an excess of nitrates in the presence of a minimum potash supply. Farmers who are unable to secure potash fertilizer for their potato fields but who have stable manure may insure their crops against attack by its use. In sections where certain types of soil have been observed to suffer from the disease under discussion, and it is advisable to plant potatoes on these types next year, it is strongly recommended that potash fertilizers or stable manure be applied if either are obtainable.

DETERMINING ACIDITY OF CORN.

The test to determine the acidity of corn, which previously required 16 to 18 hours, can be made in less than 1 hour by the use of improved apparatus developed by H. J. Besley and G. H. Baston, of the Office of Grain Standardization, Bureau of Plant Industry. Under the new method an electric mechanism, similar to those seen on soda fountains, is used to mix finely ground corn and alcohol. Thirty minutes of mixing it is found will extract from the corn an amount of acid-reacting substances comparable to the amount extracted through digestion in 80 per cent alcohol at room temperature for 18 hours.

The methods for making acidity determinations of corn with this apparatus are described in detail in Circular 68, Office of the Secretary, recently published by the United States Department of Agriculture.

The Bureau of Soils last year completed reconnoissance surveys covering more than 3,000,000 acres in the lower San Joaquin Valley, Cal., and 2,287,360 acres in Wisconsin.

TESTING DAIRY COWS.

Increased Profits as Result of Cooperative Work—Bull Associations Raise Quality of Herds.

Increases of from $10 to $15 and in some cases much higher in the annual profits from each dairy cow have resulted from the organization of cooperative cow-testing associations in the United States, according to statistics gathered by the Dairy Division of the United States Department of Agriculture. The expense of membership in these associations, on the other hand, has been only about $1.50 per cow per year. The organizations therefore have been very profitable.

Because of the great and obvious economic advantages arising from the associations dairy specialists of the department believe that the organizations are one of the most important factors for the upbuilding and development of the dairy industry in this country. Such an organization consists generally of 26 farmers, living within a radius of a few miles, who cooperate to hire an expert tester to keep accurate accounts of the amounts and cost of feed consumed by each cow in the association, the quantity of milk produced by each and its richness in butter fat. These statistics usually reveal the fact that some cows are not producing enough to pay for their keep, while others are highly profitable. Acting on this information the owner of the cows disposes of the least desirable of his animals and makes up his herd exclusively of those that produce a considerable profit.

The membership of the association is placed at 26 so that the tester can make a complete round each month, devoting one work day to each member, and that he may keep his records on a monthly basis. It has been found by careful experiments that the averages based on monthly tests do not vary more than 2 per cent from the production, as shown by daily observations. Since the tester is an expert and can make the necessary tests and computations rapidly, and since he can be depended on to make his observations independently of pressure of work on the individual farm, the owners of dairy cows find it cheaper and more satisfactory in many cases to have their testing done through the association than to undertake to do it themselves.

There are now nearly 350 cow-testing associations in the United States, 135 having been added during the last year. These associations have an aggregate membership of 8,800 farmers, owning approximately 150,000 cows. The cow-testing association originated in Denmark in 1895 and the first of the organizations in this country was formed in Michigan in 1906. Because of the value of the associations to the dairy industry of the country the United States Department of Agriculture is stimulating interest in them and is assisting farmers in their organization.

Bull Associations.

Another and somewhat similar line of cooperative work which is being encouraged by the department for the improvement of dairying and cattle raising is the formation of bull associations. The function of these organizations is to make available, at slight expense, the services of pure-bred bulls for the herds of the associated farmers. It has been found that often the total value of the scrub bulls owned by farmers is sufficient to supply through a bull association pure-bred bulls for the herds of all. A number of "blocks" of the association members are formed and a pure-bred bull placed in each. The bulls are shifted every two years to prevent inbreeding.

A considerable proportion of the nearly 22 million cows in the United States are too inferior to produce profitably. Where the bull associations have been formed the grade of the stock has been raised appreciably. Dairy specialists of the department believe that these associations will be an important factor in increasing the quality of dairy cattle throughout the country.

CONTAGIOUS ABORTION.

Stockmen and dairymen are urged in a new Farmers' Bulletin, No. 790, to inaugurate a systematic campaign against contagious abortion.

Already the annual losses from this disease amount to millions of dollars, and unless its ravages are checked it is apt to equal tuberculosis, which is now thought to stand first among animal diseases in point of economic loss.

Details of the disease and its treatment are given in the bulletin referred to, which may be secured upon application to the United States Department of Agriculture, Washington, D. C.

It is practically useless to sow alfalfa on thin soils where the bed rock approaches the surface; on land which is underlain at comparatively shallow depths by hardpan; or in locations where the subsoil is so compact that the roots can not penetrate it.

HOME-GROUND WHEAT.

Possesses Many Advantages When Used as Cereal Food—Recipes and Directions for Making Bread.

There are few farm homes where good, clean whole wheat in the grain can not be obtained. By "clean" is meant free from dirt and also from other seeds, like those of weeds. In many cases in the country families grow wheat and in many towns wheat can be purchased for a moderate price. Even in cities it can often be bought for 5 cents a pound.

In early times it was the common practice to "crack" wheat at home and cook it as we do breakfast foods. Such cracked wheat is very palatable. When "homemade" it is low in price as compared with many commercial breakfast foods.

Because of its good qualities, experts in the Office of Home Economics of the United States Department of Agriculture have been experimenting to see if it is practicable to grind whole wheat in the home and to use it for breakfast foods and bread making. As a result it has been found possible to grind whole wheat in an ordinary coffee mill fine enough for use as a breakfast cereal and even fine enough for use in bread making. The wheat first should be washed until the wash water is clear and then spread on a cloth to be dried before it is ground. No claim is made that such homemade meals and flours are superior in flavor, appearance, or wholesomeness to the higher-priced preparations on the market; it is merely suggested that they make low-priced and palatable foods which give a pleasing variety to the diet.

The grinding, of course, is rather time-consuming, and no family, unless very hard pressed, would wish to use these products as its only cereal foods. They have some very great advantages, however. They contain all the nourishment of the original wheat. They are more laxative than white flour and than many of the common breakfast foods on the market. Among cereal foods they are relatively rich in mineral matters and in growth-promoting and body-regulating substances. These last are present in many foods, but in such small amounts that they have until recently escaped discovery. They are now thought to play an important part in growth and in keeping people well. They are found in milk and eggs, fruits and green vegetables, and in the outer portions of cereal grains. If the diet is very limited in variety the whole grain products may be needed to supply these substances. If, on the other hand, it is generously varied the kind of grain products selected becomes a matter of individual preference, so far as these substances are concerned. Grain products of all sorts, in addition to being economically very important, are very useful and valuable foods, worthy of the place they occupy in our daily fare.

Home-ground breakfast food, like all coarse cereal preparations, requires long cooking. It always should be cooked at least three hours and is better if cooked all day or all night. This fact must be taken into consideration in counting its cost. There are many farm households, however, where fire is kept all the time in winter, and in these households wheat can be cooked a long time without adding to its cost. The longer it is cooked, the better. A fireless cooker may be used for the purpose.

The oven is a convenient place for cooking coarse cereal mushes. They may be prepared in a covered crock, just as are beans, or they may be cooked on top of the stove. In this case a double boiler is convenient, for in it they are not likely to be burned. An ordinary kettle, however, will do. Soaking for several hours will shorten the time of cooking.

Great care should be taken in salting home-ground wheat. This is true of all cereal mushes, but is especially necessary in the case of this one, which is not so delicate in flavor as are many of the more expensive cereal preparations. In cooking any cereal mush it is well to allow a level teaspoonful of salt for each cupful of water used. This suits the taste of most people and at least makes a good starting point. When the desired allowance of salt is determined it always should be carefully measured. For a quart of salted water allow one cupful of coarsely ground wheat. This may be put into cold or hot water. If the water is cold it should be heated gradually after the cereal is added. Under these circumstances no stirring is necessary at any time unless a very large quantity of cereal is used. In this case the weight of the upper portion tends to cause the lower parts to become lumpy, and some stirring is needed. If the cereal is put into hot water the mixture must be stirred until it has thickened a little; after that no stirring is necessary.

If skim milk—a valuable food material often wasted—is used in preparing this mush the food value of the dish greatly is increased because the milk adds considerable protein, one of the chief body-building materials of food. The use of a quart of skim milk in place of a quart of water will add about as much protein as there is in four eggs. It will not, of course, supply the fat which eggs supply, but, on the other hand, it adds over 1½ ounces of milk sugar and some very valuable mineral substances.

Breads can be satisfactorily made out of home-gound meal or "whole wheat flour" or out of mixtures of home-ground white meal in equal or in other proportions. The following recipe was worked out in the Bureau of Chemistry:

3 cupfuls of wheat meal (or 2 cupfuls wheat meal and 1 cupful of white flour),
1½ cupfuls of lukewarm water,
½ cake of compressed yeast,
1 level teaspoonful of salt,
1 level tablespoonful of sugar,
1 level tablespoonful of shortening if desired.

Mix the yeast with a small amount of lukewarm water; dissolve the sugar and salt in the rest of the water; mix the two solutions and add all to the meal (or meal and flour). Mix thoroughly so that all the liquid is incorporated in the mass, cover and set in a moderately warm place to rise. After about two hours, or when well risen, add the shortening and knead well, adding a little meal if necessary, until a smooth, elastic dough has been formed. Cover and set aside again to rise for about one hour. Knead lightly, form into a loaf, place in a greased pan and allow to rise until just double in bulk. (This is only two-thirds of the usual rise in the pan when white bread is made.) Bake slowly for three-fourths hour.

Since the chief object of using home-ground meal is economy, an attempt has been made in the Office of Home Economics to reduce the expense and to increase the food value of the bread made from it. The following recipe has been worked out:

Home-Ground Wheat Bread.

(Long, overnight process—20-ounce loaf.)

1¼ cupfuls skim milk,
3 cupfuls home-ground wheat,
1 tablespoonful sugar,
1¼ teaspoonfuls salt,
½ dry yeast cake,
1 tablespoonful butter or other fat, if desired.

Put the sugar and salt into a mixing bowl, scald the milk thoroughly and pour over the sugar and salt. Dissolve the yeast in a little of the liquid; add it to the rest of the liquid. Beat into the liquid 1½ cups of meal. Cover and keep at about the temperature of an ordinary room (70°) overnight, or until the sponge is very light. Add enough more meal (about 1½ cups) to make a loaf stiff enough to mold without sticking either to the hands or to the board. Mold in the fat at this point, if it is used. Allow the dough to double in volume, mold into a loaf, put into a pan of standard size (1½ quarts), and allow it to rise until it meets the top of the pan. Bake 50 to 60 minutes.

Methods of planting corn by which one or two rows of an early-maturing variety alternate with one or two rows of a later-maturing variety have given higher yields than either variety planted alone, according to the annual report of the Bureau of Plant Industry. Where there is likely to be a shortage of moisture during certain periods of the growing season, dependence should not be placed in a single variety; under such conditions two or three varieties which differ considerably in length of growing season should be grown.

LABEL LEGEND LAPSES.

New Way for Manufacturers to Guarantee Foods and Drugs Is Explained by Department.

The following legend, so familiar in the past on food and drug packages, "Guaranteed by Manufacturer, under the Food and Drugs Act, June 30, 1906, Serial Number 265424," is disappearing from labels. A method for guaranteeing foods and drugs which will be less misleading to the public has been provided by the officials in charge of the enforcement of the Food and Drugs Act. Under the new plan manufacturers may guarantee their products on the invoice or bill of sale, or by certain other methods, but according to a food inspection decision which became effective on November 1, 1916, they may not make any statement regarding a guaranty or serial number on the labels of packages of foods or drugs which enter interstate or foreign commerce. However, labels containing the guaranty legend and serial number which were printed prior to May 5, 1914, the date on which the first notice to discontinue the guaranty legend and serial number was issued, may be used until May 1, 1918, in order to prevent the loss that otherwise would occur from the destruction of such labels.

The New Way to Guarantee.

The manufacturer, wholesaler, or other person residing in the United States and shipping foods or drugs into interstate commerce, according to the amended regulation, may print or stamp his guaranty on the invoice, bill of sale, or on any commercial paper that contains a list of the items of foods or drugs which he intends to guarantee. The Department of Agriculture does not prescribe the exact form that the guaranty shall take, but is of the opinion that the following wording will be satisfactory:

"I (We), the undersigned, do hereby guarantee that the articles of food (and drugs) listed herein are not adulterated or misbranded within the meaning of the Federal Food and Drugs Act, June 30, 1906, as amended."

This statement should be followed by the signature, which may be printed or stamped, if the invoice or other document is transmitted by the guarantor direct to the dealer, and the address of the guarantor.

Why the Change Was Made.

Originally it was provided in the rules and regulations that the manufacturer or wholesaler who desired to guarantee that his products complied with the Food and Drugs Act might file a general guaranty with the Department of Agriculture to the effect that the foods or drugs he shipped into interstate commerce were not adulterated or misbranded within the meaning of that act. Upon the receipt of a properly executed guaranty the department assigned a serial number to the manufacturer or wholesaler who filed the guaranty. The manufacturer or wholesaler was authorized to use this number on his labels to indicate that the guaranty which he had filed with the department covered the products on which the number was used. After this method had been in operation for some time it was found that the guaranty legend on the label was misleading to the public. It was incorrectly assumed by consumers generally and some retail dealers that the guaranty legend on the label meant that a sample of the product had been examined by the United States Department of Agriculture and that in effect the United States Department of Agriculture actually guaranteed the product.

Object of the Guaranty.

The Food and Drugs Act provides that no dealer shall be prosecuted under the provisions of that act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party residing in the United States, from whom he purchases articles of food and drugs. The guaranty should be to the effect that the foods and drugs to which it applies are not adulterated or misbranded within the meaning of the act. The object of this provision is to make the manufacturer or wholesaler or person who knows the composition of the food and drug products responsible for their compliance with the provisions of the law. In many cases a dealer does not know the composition of the products he sells, and can not afford the expense of having an analysis made in order to determine it for himself. A provision, therefore, was inserted in the law to the effect that, if the dealer secured a guaranty from the manufacturer or wholesaler or other person from whom he purchases, the party making the guaranty would be responsible under the law, and the dealer would be relieved of responsibility. The dealer should see that all his foods and drugs which have entered interstate commerce, or which he expects to ship in interstate or foreign commerce, or to sell in the District of Columbia or the Territories, are guaranteed to him in the manner outlined. The guaranty was never intended to be, and never has been, in any sense a guaranty by the Department of Agriculture.

Probably no other field crop requires lime to such an extent as does alfalfa, and with the exception of rather limited limestone areas, practically all of the soils of the United States east of the ninety-fifth meridian require liming for the best development of this crop.

MILKING MACHINES.

Most Efficient When Used in Large Herds, According to Recent Farm Management Studies.

That milking by machinery, compared with hand milking, is less expensive, in general, in herds of more than 15 cows, and more so in smaller herds, is indicated in recent studies made by farm-management specialists of the United States Department of Agriculture.

One of the important conditions affecting the economy of milking large herds with machines was found to be the elimination of unnecessary labor. Herds that normally required three men for milking by hand, only two of whom were needed to feed and care for the animals, required only two men to milk by machine. The available labor and the labor requirements are therefore better balanced in the latter case, since the same two men may milk and otherwise care for the herd, the labor of the third milker required under the hand system being dispensed with. This tendency toward economy when machines are used can not result in actual economies in all cases when a small number of cows is milked, since depreciation, fuel consumption, repairs, interest on investment, etc., are responsible for considerable costs which must be charged to the milking expense.

The studies were made in typical intensive dairying regions in Delaware, Chenango, and Chautauqua Counties, N. Y., and among mixed dairying and farming enterprises in Lenawee County, Mich., Fulton County, Ohio, and McHenry County, Ill. It was found that in herds of 15 cows or less the average time required to milk a cow by hand was a fraction over 7 minutes, and by machine a fraction under 5 minutes. In herds of over 50 cows, however, the time required to milk by hand was a fraction under 7 minutes and by machine 4.15 minutes. In milking by hand, the average cost per cow in herds of 15 cows or less was $10.91 a year as against $10.45 in herds of 50 or more. When machines were used the cost was $11.77 a year in the smaller herds and $7.34 in herds of 50 or more.

The value of the labor replaced by the milking machines was found to vary from $2.63 per cow in herds of 15 cows or less to $8.33 per cow in herds of more than 50 cows. The addition to the time available for field work due to use of the machines was found to vary from 1.5 to 5.1 hours, according to the size of the herds.

Attention is called to the fact that milking machines must be operated by competent operators and that stripping by hand after the machine is essential if satisfactory results are to be obtained. The majority of the farmers visited during the studies believe that the milking machine has no effect one way or the other on the general welfare of the herd.

Studies of the comparative efficiency of various combinations of millking units and operators indicate that the greatest speed is made when one man operates and strips after two units, each of which milks two cows.

The accompanying table shows the data gathered in the studies in regard to the comparative annual costs of hand and machine milking on farms with herds of different sizes.

Annual costs of hand and machine milking.

Size of herd.	Machine milking.							Hand milking.	
	Number of farms with herds of each size.	Interest on investment (per cow).	Value of gas and oil (per cow).	Cost of repairs (per cow).	Depreciation (per cow).	Labor cost (per cow).	Total cost (per cow).	Number of farms with herds of each size.	Labor cost (per cow).
15 cows and less	32	$1.26	$0.94	$0.20	$1.98	$7.39	$11.77	28	$10.91
16 to 30 cows	72	.79	.84	.20	1.00	7.31	10.14	63	10.26
31 to 50 cows	41	.61	.84	.25	1.49	6.03	9.22	16	10.11
51 cows or more	11	.56	.83	.36	1.12	4.47	7.34	6	10.45
Average	156	.82	.86	.22	1.24	6.79	9.93	113	10.41

CIVIL SERVICE EXAMINATIONS.

Assistant in Marketing Live Stock and Meats.

An open competitive examination for Assistant in Marketing Live Stock and Meats, for men only, is announced by the U. S. Civil Service Commission for February 6, 1917. From the register of eligibles resulting from this examination certification will be made to fill vacancies in this position in the Office of Markets and Rural Organization, Department of Agriculture, Washington, D. C. The duties of the position will be to assist in conducting investigations of the methods and cost of marketing live stock in different sections of the United States and at central live-stock markets, and in the collection and distribution of information relative to the market movements and prices of live stock, meats, and other animal products. Competitors will not be required to report for examination at any place, but will be rated on education, experience, and publications or thesis. To be eligible applicants must have graduated from a full four years' course in a college or university of recognized standing, and later have had at least two years' responsible experience in some general line of animal husbandry or live stock and meat handling and marketing, or as a teacher and investigator in this field; or they must have graduated from a standard high school and have had six years' responsible experience. The applicants must have reached their twenty-fifth but not their fortieth birthday on the date of the examination.

Assistant Physiologist in Crop Utilization.

A competitive examination for Assistant Physiologist in Crop Utilization, for men only, is announced by the Civil Service Commission for February 6, 1917. From the register of eligibles resulting from this examination certification will be made to fill a vacancy in the Bureau of Plant Industry, Department of Agriculture, Washington, D. C., for an assistant physiologist to assist in the development of oil-producing crops and in working out the technical utilization of their products. Competitors will not be required to report for examination at any place, but will be rated on general education and scientific training, experience and fitness, and publications or thesis. Applicants must have graduated from a college or university of recognized standing and must have had at least one year's practical experience in applied industrial chemistry. Applicants must have reached their twenty-fifth but not their forty-fifth birthday on the date of the examination.

Specialist in Dairy-Cattle Breeding.

A competitive examination for Specialist in Dairy-Cattle Breeding, open to men between 25 and 45 years of age, will be held by the Civil Service Commission on February 6, 1917. The duties of this position in the Bureau of Animal Industry of the Department of Agriculture will be to conduct experiments in breeding dairy cattle at the Beltsville, Md., Experimental Farm of the bureau, at the U. S. Naval Academy farm at Gambrills, Md., and at some dairy farms on dry-land and irrigation projects in the Western States.

For this examination competitors will not be required to report in person but will be rated on general education, scientific training, experience, and fitness; they will be obliged also to hand in a thesis on a subject pertaining to the work. They must have been graduated in animal or dairy husbandry from a recognized college or university, have had at least one year's postgraduate work and at least three years' experience in investigational work with dairy cattle, preferably in breeding work. Additional credit will be given for training in biology.

Persons who meet the requirements and desire to take any of these examinations should apply at once to the U. S. Civil Service Commission, Washington, D. C., for Form 2118, and state the title and date of the examination desired.

Junior Chemist.

An open competitive examination for Junior Chemist, for men and women, is announced for February 7 and 8, 1917. Certification will be made as the result of this examination to fill vacancies in the positions of assistant chemist, Bureau of Chemistry; assistant chemist, Navy Yard Service; junior chemist, Bureau of Mines and Bureau of Soils; laboratory assistant in chemistry and assistant chemist, Bureau of Standards, and vacancies in other positions requiring similar qualifications, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Applicants may be examined in any one of 10 general divisions of chemistry, including food, metallurgical, and soil chemistry, etc. To be eligible applicants must have graduated from a full four years' course in a college or university of recognized standing; or must be a senior student in such an institution with the expectation of receiving a degree within six months from the date of the examination. Applicants must have reached their twentieth birthday on the date of the examination. Examinations will be held at a large number of places throughout the country. Persons who meet the requirements and desire this examination should at once apply to the U. S. Civil Service Commission, Washington, D. C., for Form 1312, stating the title of the examination desired.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JANUARY 31, 1917. No. 26

FARM PRODUCTION.

$13,449,000,000 Estimated Total Gross Value of Crops and Animal Products for Year 1916.

By far the largest gross value of farm production in this country was reached in 1916, according to estimates made by the United States Department of Agriculture. The total of crops and animal products was $13,449,000,000, an increase of $2,674,000,000 over the total of 1915, which was itself a high-water mark. The mere increase is greater than the census gross value of farm production in 1889, and is nearly as large as the census crop value in 1899. The increase of 1916 over 1914 was $3,554,000,000. The gross value of farm production is the total of crops and animal products, and takes no account of the use of a product as a material for other production; nor are any costs of production subtracted. Consequently, the value of gross production should be regarded as an index number, and not as so many net dollars put into the farmer's pocket.

The value of the net product of wealth on farms has never been determined, and can not now be estimated. The items for the estimated years are expressed in gross value and are made to conform to the census plan so as to be comparable with those for the census years.

If the gross value of the census farm production of 1899 is represented by 100, the value for 1879 was 46.9; for 1889, 52.2; for 1909, 181.4; for 1914, 209.8; for 1915, 228.4; and for 1916, 285.1.

In the subdivision of the value of gross production into its two main elements, crops and animal products, it appears that the total estimated crop value in 1916 was $9,111,000,000, an amount greater than the sum of the estimated values of crops and of animal products for any year previous to 1912, greater than the total estimated crop value of 1915 by $2,204,000,000, and of 1914 by $2,999,000,000.

The total estimated value of animal products in 1916 was $4,338,000,000, or more than double the value for 1904, which was the highest amount to that time. It was greater than the estimated value of animal products in 1915 by $470,000,000, and of 1914 by $555,000,000.

Compared with the value of farm crops in 1899, represented by 100, the crop value for 1909 was 183; for 1914, 203.9; for 1915, 230.3; and for 1916, 303.8. A similar comparison for animal products results in a percentage of 178.7 for 1909, 220.2 for 1914, 225.1 for 1915, and 252.5 for 1916.

The crop value for 1916 increased over that of 1899 by 203.8 per cent, of 1909 by 66 per cent, of 1914 by 49 per cent, and of 1915 by 31.9 per cent. The value of animal products increased in 1916 over 1899 by 152.5 per cent, over 1909 by 41.3 per cent, over 1914 by 14.7 per cent, and over 1915 by 12.2 per cent.

From 1908 to 1914 the total crop value, as a fraction of the value of total gross farm production, declined from 64.6 to 61.8 per cent. In 1915, on the contrary, this tendency was not only arrested, but was sharply reversed, and the crop value then became 64.1 per cent of the total of crops and animal products, followed by another sharp advance to 67.7 per cent in 1916.

Four crops have each exceeded a billion dollars in value at the farm in 1916. The estimate for corn is $2,296,000,000; cotton lint, based on gross weight, $1,128,000,000; cotton crop, including lint and seed, $1,406,000,000; hay, tame and wild, $1,162,000,000; wheat, $1,026,000,000. Other crops that each exceed a hundred million dollars are oats, $656,000,000; potatoes, $417,000,000; farm wood-lot products, $221,000,000; apples, $186,000,000; tobacco, $169,000,000; barley, $160,000,000.

The level of prices paid to producers for the principal crops, December 1, 1916, was about 55.9 per cent higher than a year previous, 52.9 per cent higher than two years before, and 52.8 per cent higher than the average of the previous eight years on December 1. The year 1916 was one of comparatively low crop production, but the prices and values of most of the crops were extraordinarily high.

The most common test for determining if soil is acid or sour is by means of blue litmus paper, which can be obtained at a very small cost from nearly every druggist. A small quantity of moist soil from the field is compacted into a ball, the ball broken into halves, a strip of litmus paper laid across one part and the parts pressed firmly together again. After an hour or so the ball of soil should be again broken apart and the paper removed. If the paper shows a decided pink color the sample of soil is acid. If a deep-rooted crop such as alfalfa is to be grown it will be well to test samples taken from both the surface soil and the subsoil.

PRODUCE WINTER EGGS.

Supply in Periods of Greatest Scarcity May Be Increased by Proper Methods of Caring for the Birds.

Poultry owners who wish to obtain a satisfactory production of eggs during the fall and early winter should arrange to hatch pullets in March or April. Birds hatched at this time will be well matured in the fall. Furthermore, a greater proportion of them will go broody early in the spring, thus completing the circle necessary for production in the fall.

Pullets hatched in the spring can be induced to lay more abundantly in the winter if they are properly fed, housed, and handled. On the average general farm, very few eggs are secured at the time when eggs bring the highest prices. It will pay the poultry owner, therefore, to devote a little trouble to providing his birds with the most favorable surroundings for the winter.

The house should be thoroughly cleaned, disinfected, and made tight before the cold weather sets in. If the house has a dirt floor, it is well to remove 3 or 4 inches of dirt from the top and to replace this material with dry gravel or sand. On cement or wooden floors 4 or 5 inches of fresh straw or litter may be thrown down after the floor has been cleaned.

Ventilation is another important factor to consider. The house should be tight on three sides, but for the fourth muslin curtains may be used for from one-third to one-half its extent. In any case, there should be some ventilation in the house, even on the coldest nights. Fowls will stand considerable cold air, provided it is dry, and ventilation will keep the air thoroughly dry in the house. On the other hand, drafts are likely to cause roup and other trouble.

Many farmers, in feeding their birds, overlook the fact that beef scrap or some similar feed is very essential during the winter months if a good supply of eggs is to be obtained. A convenient method of feeding beef scrap is in a mash made of three parts corn meal and one part each of wheat bran, wheat middlings, and beef scrap. Skimmed milk or buttermilk may be used in place of the beef scrap, but if the supply is limited some scrap also should be fed.

In experiments conducted by the department it was found that for the first four months pullets fed a ration containing beef

scrap produced, on an average, 41.5 eggs, while those fed the same ration without the scrap produced only 18.7. The cost of feeding the latter birds was 2.2 cents higher for every dozen eggs produced than in the case of the pullets fed beef scrap.

The birds should have plenty to eat, but they also should always be eager for each meal. If one-third of the scratch grain furnished them is fed in the morning and two-thirds at night, the birds will take more exercise than if they receive all the grain they desire in the morning. Good scratch mixtures may be made of equal parts by weight of cracked corn, wheat, and oats, or of two parts of cracked corn and one part each of wheat and oats.

Other directions for the winter care of birds are contained in a new publication of the United States Department of Agriculture, Circular 71, Office of the Secretary, Winter Egg Production.

RIVER AND FLOOD SERVICE.

Flood waters caused the loss of nearly $21,000,000 in the United States in 1915, according to compilations cited in the report of the Chief of the United States Weather Bureau. Of this amount a little more than one-half fell upon the agricultural interests of the country. To minimize the losses from floods, the report states, 62 of the principal stations of the bureau are participating in river and flood service work, and about 600 subordinate river gauging and rainfall stations are maintained to supply data for different watersheds. Flood warnings and all forecasts of river stages are issued by trained section officials who are under direct supervision of the Weather Bureau at Washington.

The severe floods of January and February, 1916, in the Mississippi below Cairo, in the rivers of Arkansas and Oklahoma, and, later in the year, in the Mississippi between Dubuque, Iowa, and Louisiana, Mo., afforded, according to the report, a critical test of the efficiency of the organization. As the flood crest on each stream approached, timely and accurate warnings thereof were distributed well in advance. The present system of flood forecasting is the result of about 10 years of well-sustained effort on the part of river forecasters to improve the warnings and to get a better grasp upon the problem.

Only about one-half as much alfalfa seed and less than one-half as much crimson clover seed were imported during the fiscal year 1915–16 as during either of the two previous years. Less than 70,000 pounds of hairy vetch seed were imported in 1916, whereas 2,500,000 pounds were imported in 1914.

VESICULAR STOMATITIS.

Particularly Dangerous Because It May Conceal the Presence of Foot-and-Mouth Disease.

The outbreak last fall of vesicular stomatitis among horses and mules intended for shipment abroad has led Federal specialists in animal diseases to urge the imposition by State live-stock officials of local quarantines wherever this disease is discovered. All owners and handlers of horses, mules, and cattle, particularly liverymen, managers of stockyards, and stockmen should be directed to separate sick from well animals, to clean and disinfect contaminated premises, and to have all the infected animals appropriately treated.

These precautionary measures are rendered particularly desirable because of the close resemblance of vesicular stomatitis to foot-and-mouth disease, and because of the fact that vesicular stomatitis will spread from horses to cattle. It is difficult to distinguish at once between the two diseases, and as long, therefore, as vesicular stomatitis exists in the country there is danger that a case of foot-and-mouth disease might be mistaken for it.

Vesicular stomatitis is not of as great economic importance as the foot-and-mouth disease, and it is apparently conveyed only by direct contact, whereas foot-and-mouth disease may spread in any one of a great number of ways. Furthermore, vesicular stomatitis affects cattle and horses but not, apparently, hogs and sheep; while foot-and-mouth disease is dangerous to hogs and sheep as well as to cattle, but rarely to horses.

The most striking symptom of vesicular stomatitis is the occurrence of vesicles or blisters followed by erosions in the mouth and occasionally in the muzzle, but chiefly on the tongue. These vesicles and erosions are accompanied by drooling and produce in the affected animal an appearance similar to that caused by foot-and-mouth disease. On the other hand, the soreness in the feet which is a common symptom of foot-and-mouth disease is absent. Another difference is that vesicular stomatitis is not as a rule ushered in by any apparent rise of temperature.

The two diseases, however, are so similar in their effect upon the appearance of the animal that it requires a trained veterinarian to distinguish accurately between them, and a positive diagnosis can scarcely be made without inoculating other animals and observing the results carefully for several days. The resemblance between the two diseases is regarded as closer than that between either mycotic or necrotic stomatitis and foot-and-mouth.

It is apparent, therefore, that the presence of vesicular stomatitis in the country is dangerous not only because of the injury it causes in itself, but chiefly because of the risk that a case of foot-and-mouth disease might be mistaken for it.

In the outbreak last fall a shipment of cattle from Nebraska to the Kansas City stockyards was found to include animals affected with lesions strikingly similar to those of foot-and-mouth disease. It was only after careful and comprehensive experiments that the authorities were convinced that the disease was not foot-and-mouth but vesicular stomatitis. In the meantime outgoing shipments from the yards were stopped, the infected shipment traced back to its point of origin in western Nebraska, and other precautionary measures taken. It has been learned that the disease was spread to the cattle in the Kansas City shipment from a livery barn in Chase County, Nebr., which became infected by the return of several horses rejected out of a carload sent to Denver for Army purposes. At this point and at Grand Island, Nebr., horses and mules had been gathered together in considerable numbers for shipment. The disease appears to have broken out here and to have found ideal conditions for its spread among the thousands of animals closely quartered in barns and pens. After the discovery of the existence of the disease, sick animals were separated from the well, those which were healthy but had been exposed to infection were held for eight days before being shipped, infected pens were cleaned and disinfected, and the mouths of sick animals were thoroughly washed with a weak solution of permanganate of potash.

ANALYZING FARM BUSINESS.

Farmers Adopting the Practice as a Means of Determining the Efficiency of Farming Methods.

That the farmers of the country are adopting more and more the practice of analyzing their business carefully and using this analysis in keeping books was brought out recently in the hearings on the agricultural appropriation bill before the Committee on Agriculture of the House of Representatives. The Office of Farm Management of the United States Department of Agriculture has provided in Farmers' Bulletin No. 661 blanks for use in analyzing a farm business in such a way that the farmer can readily ascertain the various sources from which he derives his income, the ways in which he spends his money, the total income from the farm, and the amount which should be charged off for interest on his investment.

County agents, it was said, make much use of this bulletin. They take it to the farmer,

sit down with him, and work out with him a complete analysis of his business, so that he is able to see exactly in what respects he is losing money and in what respects he is making it. Furthermore, these blanks are frequently used when farmers write to the department for advice and assistance. In such cases it is customary to send the inquirer the bulletin, with the request for him to analyze with its aid his business. The information thus obtained is compared with similar information on file in the department and the specialists in the Office of Farm Management are thus enabled to point out the mistakes which are causing trouble in any one individual case. It may be found, for example, that a dairyman is spending from three to four times as much money for labor as other farmers conducting business on a similar scale.

To secure the necessary data that enable the department to determine whether or not a farmer is conducting his business as efficiently in any one respect as he should, extensive farm surveys are made in representative localities. A group of from 500 to 700 contiguous farms is selected, and a detailed analysis of the business of each one of these made by trained experts. They ascertain what the investment is, how much of it is in land and buildings, and how much in live stock, machinery, feed, supplies, etc. The production of the farm in crops and live stock is next studied, and the returns from the sales of all products ascertained. The survey also includes an estimate of the amount of depreciation of the buildings, work stock, machinery, etc., on the farm. With this information it is possible to determine approximately what the average farmer in that section is doing, and when this average is compared with individual cases it is possible to throw light on why the prosperous farmer is succeeding and why his less fortunate neighbor is not.

Approximately one-third of the farmers who have been induced to analyze their business in this way, it is said, are now keeping books. Hitherto, many farmers have been discouraged from this by the apparent complexity of the systems employed. By simplifying these systems so that the farmer can tell what the figures are all about and how to use them, the department is greatly increasing the amount of bookkeeping being done on the farms of the country.

The Chinese downy chestnut trees (*Castanea mollissima*) which were distributed in 1907 have not succumbed to the bark disease and some of them have borne a few fruits. It is clear that they have a high degree of resistance to disease, and although they can not be expected to take the place of the much larger species of chestnut native to America, in so far as timber production is concerned, they can be at least relied upon to furnish good nuts for the trade.

POTATOES AS FOOD.

Perform Important Function in Keeping Body Tissues Alkaline—Methods of Preparation.

The general use of potatoes in the average family and the better customs prevailing in many homes in preparing the tubers for food are based on sound economic and dietetic reasons, according to specialists of the Office of Home Economics of the United States Department of Agriculture. Studies of the preparation and use of potatoes as food are reported in Department of Agriculture Bulletin No. 468, recently issued.

Potatoes are easy to cook in a variety of ways. From the point of view of dietetics, they furnish starch in one readily digestible form, contain mineral substances of importance to the body, and—a fact less generally known—tend to make the tissues and fluids of the body alkaline, so counteracting the tendency of meats, eggs, fish, and like foods to create acid conditions. Since the body does its work best when its condition is either neutral or slightly alkaline, potatoes, like most vegetables, perform an important function in the diet besides furnishing energy-producing material. This scientific fact justifies the custom that is prevalent in many families of serving a goodly supply of potatoes or other vegetables with each helping of meat.

Potatoes, however, while a valuable addition to a mixed diet, alone are not suited to meet the needs of the body because of their poverty in proteins and fat. Of these latter important elements protein is furnished in meats, eggs, fish, milk, beans, and similar foods, and fat in butter, bacon, table oils, and the fats and oils used in cookery.

Greater care than commonly is exercised should be taken in peeling potatoes. Very often 20 per cent of the potato is pared away. This results not only in the waste of considerable potato but also in the loss of one of the most valuable portions of the tuber, since the soluble mineral salts are present in the material near the skin, which would be removed and thrown away. These salts can be preserved by a more careful removal of the skin, as by shallow paring or rubbing, and also by boiling or baking the potatoes in their jackets.

Paring before boiling, however, may be the most desirable method of cooking potatoes which through an undue exposure to light may have acquired a bitter taste, or those which have been kept until late in the spring, since in this way more of the disagreeable flavor is eliminated. Such potatoes may also be soaked before cooking.

While these methods may be desirable with potatoes which have been exposed to light, they result in the loss of considerable food value without compensating advantages when applied to new or well-matured potatoes. If such potatoes are boiled after paring, they should be dropped into boiling water instead of being placed on the stove in cold water. By the latter method there is twice the loss of protein, or tissue-building elements, resulting from the former. The loss of mineral matter is about the same by each method. There is no loss of starchy material in boiling unless portions of the tuber break off.

Practically the only loss when potatoes are baked in their skins is of the water which escapes as steam. The more or less common custom of pricking holes in the skin of baked potatoes or breaking them is explained by the fact that unless the steam which is formed inside the skin is allowed to escape it will change back into water and produce sogginess.

Potatoes which have turned green and sprouting tubers have present a considerable quantity of solanin, an acrid poisonous substance which, though not dangerous in the quantities ordinarily met with, gives a disagreeable flavor. It is best, therefore, to avoid such potatoes or to cut out green or sprouting portions.

NEW FARMERS' BULLETINS.

Grasshopper Control in Relation to Cereal and Forage Crops. (Farmers' Bulletin 747.)

Growing Grain on Southern Idaho Dry Farms. (Farmers' Bulletin 769.)

Homemade Fireless Cookers and Their Use. (Farmers' Bulletin 771.)

Control of the Sugar-Beet Nematode. (Farmers' Bulletin 772.)

Corn Growing Under Droughty Conditions. (Farmers' Bulletin 773.)

Growing Cherries East of the Rocky Mountains. (Farmers' Bulletin 776.)

Castration of Young Pigs. (Farmers' Bulletin 780.)

Sea Island Cotton. (Farmers' Bulletin 787.)

To-day many of our roads carry a motor traffic far in excess of the total traffic of all classes carried 12 years ago. At the present time there are about 2,500,000 motor vehicles in use on our public roads, or about one motor vehicle for every mile of road.

Where land in the East is plowed in the spring for alfalfa, at least four to six weeks should intervene between the time of plowing and seeding, during which time the land should be harrowed every 10 or 12 days to keep down the weeds and to conserve the moisture. Where the soil is inclined to be too loose or when there are any clods, the roller pulverizer is an excellent tool to use.

FEDERAL PLAN ADOPTED.

Swiss Government Exterminates Foot-and-Mouth Disease by Slaughtering Infected Animals.

As a result of the adoption of a Federal plan of combating the foot-and-mouth disease of cattle similar to that employed in the United States, the Swiss Government has succeeded in practically exterminating the malady from its country, according to Vice Consul James L. Burrell, of St. Gall, Switzerland.

The Swiss agricultural interests suffered severely from foot-and-mouth disease for a number of years, a large number of the animals either perishing or being so weakened by the malady that they had no economic value. The cattle-raising districts are dependent on exportation of the animals to adjacent countries and this business was greatly disorganized because of the prohibitions placed by such countries on importations of the cattle on account of the disease. Various efforts were made separately by the various cantons to combat the disease, each in its own way, sometimes with injury to neighboring districts; but all remedies and rules and regulations were in vain. Finally a Federal veterinary bureau was established and took up the work against the disease without regard to cantonal boundaries, adopting the practice of slaughtering all infected cattle. Through this method success eventually has been obtained. At first this general slaughtering met with great opposition from farmers and from veterinarians of the old school, but the success was so apparent that all prejudice was overcome.

The principal slaughtering of infected cattle was begun about the time of the outbreak of the present European war. Swiss scientists pronounced the meat fit for food, and since no prejudice was manifested against it much of it was fed to the troops. In the United States dealers and consumers have been unwilling to handle or eat the meat of animals affected by foot-and-mouth disease, and as a result the animals slaughtered in the campaigns against the malady have been destroyed.

The chief problem in the extermination of foot-and-mouth disease in Switzerland hinged on the practice of keeping the cattle in the valleys in the winter and pasturing them in the mountains in the summer. Each spring when cattle were taken into the highlands, foot-and-mouth disease would break out in many herds and run its course during the summer. After apparently having regained their health, the cattle would be gathered into the valleys for the winter. In many places the disease would then again break out, later dying down, but only to attack the animals anew when they returned to the mountains. The reason for this cyclical course was found to be carriers of the infection—animals which after their recovery harbored the virus of the disease on their hoofs or in their bodies. Much of the success of the Swiss in eliminating foot-and-mouth disease from their boundaries is ascribed by the veterinarians of the country to the elimination through slaughter of these moving carriers. It was found in hundreds of cases that infected animals, even after apparent complete recovery and most careful disinfection, still harbored the germs for several months and in many cases even longer. While it is anticipated that the disease may appear sporadically in the future, the authorities feel that they now know how to deal with it effectively.

VIOLATIONS OF LAWS.

Fines and penalties were imposed in prosecutions for violations of regulatory laws as reported to the Bureau of Animal Industry during the month of November, 1916, as follows:

Meat-Inspection Law.

John E. Weaver's Sons, Lancaster, Pa., $100.
Albert E. Schang, Ridgefield, Wash., $100.
Luth Packing Co., St. Louis, Mo., $5 and costs.

Twenty-Eight Hour Law.

Cleveland, Cincinnati, Chicago & St. Louis Railroad Co., $100 and $12.10 costs.
Chicago, St. Paul, Minneapolis & Omaha Railway Co., $100 and costs.
Northern Pacific Railway Co., $100 and $22.80 costs.
Illinois Central Railway Co., $100 and costs.

Quarantine Law.

Chicago & North Western Railway Co. (5 cases), interstate shipment of dead animals, $575 and $14.70 costs.
Chicago, Milwaukee & St. Paul Railway Co. (3 cases), interstate shipment of dead animals, $300 and costs.
Minneapolis & St. Louis Railway Co., interstate shipment of dead animals, $100 and costs.
St. Louis, Iron Mountain & Southern Railway Co., interstate shipment in violation of Texas-fever regulations, $100 and costs.
New Orleans & Northeastern Railroad Co., interstate shipment in violation of Texas-fever regulations, $100 and costs.
Yazoo & Mississippi Valley Railroad Co., interstate shipment in violation of Texas-fever regulations, $200 and costs.
W. F. Owen, receiver, New Orleans, Mobile & Chicago Railroad Co., interstate shipment in violation of Texas-fever regulations, $100 and costs.
Southern Kansas Railway Co. of Texas, and Atchison, Topeka & Santa Fe Railway Co., interstate shipment in violation of cattle-scabies regulations, $100 and costs.

A study of six species of thrushes by the Biological Survey shows that the economic tendencies of these birds are in keeping with their other desirable qualities. They commit no depredations on crops, and destroy large numbers of insects.

CORN GROWING.

Early Planting Recommended for Semiarid Regions—Plants Injured Less by Frost and Drought.

Corn will not grow during cold weather as wheat and oats. Corn-planting time is, therefore, a little later than the best time for sowing spring wheat or spring oats. However, according to Farmers' Bulletin 773, when seed of perfect vitality is used, it is remarkable how early in the spring corn can be planted and result in good stands and good yields. Seed of perfect vitality will often remain in cold or dry soils for several weeks and afterwards germinate and yield well. Irregular stands are sometimes attributed to poor seed, when dry, poorly prepared spots are the cause. Fields are sometimes seen in which the seed germinated promptly in moist spots but did not germinate in dry spots until rains came.

Where the seasons are long and moisture plentiful, it is customary to wait until the soil is warm before planting. In semiarid regions, however, corn should be planted early. With the soil in proper condition it is generally advisable in semiarid regions, south as well as north, to plant corn before danger from frost is entirely past. Corn planted very early usually makes a slow, tough growth and a month after planting may be smaller and look less promising than that planted later. The early planted corn ripens first, however, and usually produces the larger or the better crop. Because of its slow, tough growth corn planted very early is not so susceptible to frost and drought as corn planted later and growing more rapidly. In a series of years the gain in mature corn secured from early planting will more than make up for any injury from spring frosts. Excellent corn crops have been produced from plantings frozen off or frozen back when the plants were from a few inches to a foot or more tall. Corn is not often entirely killed by spring frosts, and if some should be injured the loss is much less serious than that from summer drought or from fall frost.

Early planted corn derives more benefit from the spring moisture supply, becomes well rooted before summer droughts begin, and may even mature before these droughts become severe.

Where the growing season is very long and warm, plantings made at about 30-day intervals increase the chances of hitting the season right and raising some good corn.

A single application of a very small quantity of sodium fluorid has been found to destroy completely all stages and all species of lice on poultry.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., FEBRUARY 7, 1917. No. 27

CORN GROWING.

Importance of Planting Methods Where Either Heat or Moisture Is Liable to Be Deficient.

The methods employed in planting corn are especially important in regions where either moisture or heat is insufficient. The following suggestions, taken from Farmers' Bulletin 773, are made by C. P. Hartley and L. L. Zook, of the Office of Corn Investigations, Bureau of Plant Industry, United States Department of Agriculture.

Listing, or planting in furrows, is the most common and best method of planting corn in a large part of the semiarid area. It is not only economical, as it permits large acreages to be handled at the least cost, but it also places the plants to the best advantage to withstand drought. As the furrows are closed by cultivation, the plant roots are placed well below the surface. A deep soil mulch can be maintained without injury to the roots. The plants are more securely braced to withstand winds than when surface planted.

In some semiarid sections early summer conditions are favorable for rapid growth. The plants make a tender, rapid growth and become larger than the later moisture supply will support. Listing retards this rapid early growth and is often a decided advantage on this account.

Where the seasons are very short, surface planting is better than listing, as the retarding of early growth leaves the plants insufficient time to reach maturity. Where surface planting is practiced on fairly level land it is usually advisable to plant in checks to permit cross cultivation. Cross cultivation makes weed and grass control easier. It also assists cultivation, drying and warming a larger part of the soil surface.

A thin stand of plants is an essential feature of successful corn growing in regions of limited moisture supply. When planting is done with a lister in rows 3 to 3½ feet apart, the plants should be one in a place and from 18 to 36 inches apart, depending upon the rainfall and the fertility and the water-holding capacity of the soil. In surface-planted corn with the hills 3½ feet apart each way, the stand should not be thicker than two plants per hill. Even with the best of seed more kernels should be planted than the number of plants desired. Some young plants, mostly the weaker ones, will perish.

The usual distance between corn rows is about 3½ feet, which is a convenient distance for cultivating. With the rows at this distance the roots meet between the rows and occupy all of the upper soil before the corn comes into tassel.

In certain droughty sections, where the seasons are comparatively long, increasing the width of row to 7 feet and doubling the stand in the row has been found to be an advantage. On account of being close together within the rows the young plants compete for the near-by moisture and are prevented from making too rapid and too tender a growth. The roots do not meet between the rows until the plants have about reached their full growth, and the moisture in the soil between the wide rows benefits the plants at the time they are forming ears. Where the summers are long other crops, or another crop of corn, can be planted later in the season between the 7-foot rows if the seasonal rainfall proves sufficient.

The success of the crop depends upon having the corn reach the ear-forming period when moisture and heat are available at the same time. The chances are increased by making a very early and a late planting of an early-maturing variety. Using seed of an early-maturing variety in one planter box and seed of a late-maturing variety in the other box increases the chances of having some plants reach the ear-forming period when moisture and heat are available at the same time.

Corn should not be covered with more than 1½ or 2 inches of soil except when the surface is dry and it is necessary to plant deeper to reach moist soil. In cold, heavy soils 1 inch is sufficient.

The time for seeding alfalfa in eastern fields depends much upon the region. In general, the best seeding time for the groups of States including Michigan, Wisconsin, and Minnesota; New England and New York; and Pennsylvania, West Virginia, northern Maryland, and northern New Jersey is from the last of June to the middle of August, depending upon the moisture and soil conditions. Early spring seedings, as a rule, have not proved successful, while seedings later than the middle of August in these sections are apt to afford too short a period of good growing weather before winter sets in for the plants to become thoroughly established.

BENEFITS OF LOAN ACT.

Ways in Which the New System Furnishes Aid to the Farmer in Financing His Business.

By reason of the facilities created by the Federal farm loan act, which was passed last summer, it will be easier in the future for a farmer to secure money to make needed improvements or for the purchase of live stock, and it will be easier also for the landless man to purchase a farm, according to a recent publication of the United States Department of Agriculture (Farmers' Bulletin 792) entitled "How the Federal Farm Loan Act Benefits the Farmer."

The Federal land banks established under this act will stand ready at all times, it is expected, to lend money to farmers on farm-mortgage security. The interest charges will be not more than 6 per cent, nor more than 1 per cent above the rate paid on the bonds sold by the banks. If 4½ per cent bonds should be issued, therefore, the rate charged on loans would be 5½ per cent or less. There will be no commissions or bonuses. The loans will be made for periods of time ranging from 5 to 40 years, thus doing away with the trouble and expense of frequent renewals.

The payment of a certain part of the principal annually or semiannually, with the interest, will be required. The total payment, including the interest, will be the same for each year, and will be just large enough so that the entire principal will be paid off at the end of the period. The annual payment thus required to pay off a loan of $1,000, with interest at 5 per cent, in 20 years, is $80.24.

After a loan has run 5 years the borrower will be permitted to pay off the whole amount, if he desires, on any interest date, or to make partial payments in addition to the regular installment.

The requirement of installment payments on the amortization plan, as outlined above, will serve, first, to cultivate habits of thrift in the borrower, and second, to make possible the placing of the loans at a lower rate of interest, since the gradual reduction of the principal constantly improves the security for the unpaid balance. The privilege of optional payments after the first 5 years leaves the borrower free to discharge his indebtedness before the end of the loan period, if he finds it convenient to do so.

The Federal land banks will perform three important services. (1) They will convert the security which farm mortgages afford into a negotiable form, known as farm-loan bonds. (2) They will furnish additional security for the protection of these bonds, through their capital and surplus, and thus make the bonds more attractive to investors. (3) They will sell the land-bank bonds in the open investment market, which, for obvious reasons, the small farmer could not reach to advantage.

The bonds are to be issued in denominations ranging from $25 to $1,000, and it is expected that the bonds of small denomination will encourage saving through their appeal to individuals who have not been in the habit of making investments. The bonds will be secured not only by farm mortgages deposited in trust with a government official (the registrar for the land-bank district) but also, as indicated above, by the capital and surplus of the 12 land banks.

Both mortgages and bonds will be exempt from all forms of taxation.

Farmers who wish to obtain money from the Federal land banks will ordinarily be obliged to form local loan associations, and get their loans through these organizations. The local loan associations will improve the credit of their members and reduce the cost of their loans through the performance of certain definite services, among which are the following: The committee called the "loan committee" of the association will appraise the property offered as security and approve all applications for loans which are sent to the land bank. The secretary-treasurer of the association will transmit the papers and carry on all correspondence with the land bank relative to the loans. The association will guarantee the mortgages of its members, the liability of any individual member being limited, however, to an additional sum equal to the amount of his capital stock, or approximately to 5 per cent of his own loan.

One important function of the new system will be to establish safe standards for the farm-mortgage business of the United States; for it is not proposed to extend any credit except on the basis of proper security. In addition to the indorsement of the local association, every loan must have the approval of one of the salaried appraisers appointed by the Government for the several land banks.

Further, not more than $10,000 may be loaned to one borrower, nor more than 50 per cent of the value of the land offered as security plus 20 per cent of the value of the buildings; and the money must be used for specified productive purposes, such as the purchase of farm land, improvements, equipment, fertilizers, or live stock, or for the payment of existing indebtedness.

The Federal Farm Loan Board of the Treasury Department has general charge of the system. The Department of Agriculture will cooperate with this board in supplying information and rendering assistance to farmers who desire to take advantage of the Federal farm loan act, especially with reference to the organization of local loan associations.

DASHEEN FINDS FAVOR.

Root Crop Comparable to the Potato Newly Introduced in South.

The dasheen, a root crop introduced into this country from Trinidad within recent years by the United States Department of Agriculture, is now grown by a considerable number of farmers and truckers in the South, and promises to become a valuable member of the group of domestic vegetables, such as the potato, which furnish starchy foods. The new vegetable is closely related to the taro, which is an important factor in the food supply in portions of the Tropics. The dasheen is itself primarily a tropical plant. It can be grown successfully, however, not only in the warmer portions of Florida but in other sections of the South as far north as South Carolina. The edible portion of the plant includes a large central corm and a number of tubers, of much smaller size, attached to and around the corm.

The value of the dasheen, it is believed, will be as a crop supplemental to rather than a substitute for the potato. The fact that the dasheen matures in the fall when potatoes must be obtained from northern producing sections should make the new plant especially valuable in the economics of the southern farmer.

In food value the dasheen is comparable to the potato, though it contains a smaller proportion of water and a greater proportion of protein, starch, and sugar than the latter. The new vegetable may be prepared for the table as potatoes usually are, or may be made into flour and used in baking. The tender shoots forced from the large corms may be prepared like asparagus, and make a pleasing dish in that form.

The dasheen is grown from whole tubers weighing a few ounces. They require a frostless season of at least seven months, with plenty of moisture. A moist but well-drained, rich, sandy loam has been found to be a satisfactory soil for dasheen culture. A large proportion of either clay or muck in the soil produces strong-flavored, tough corms, which are often unfit for table use. Large crops are produced under such conditions, however, and make excellent stock feed.

The crop is planted in February in southern Florida and as late as the early part of April in South Carolina. The plants are spaced about 3½ by 3½ feet. Dasheens may be dug for home use by the middle of September and the main crop can be harvested at any time after the last of October. The clumps of tubers are left on the surface of the ground for several days to dry. The tops and small roots are then broken off and the dasheens placed in storage.

The dasheen is a good shipper and is handled by the carriers at the same freight rates as potatoes. The vegetable has already found its way into a number of northern markets.

FEDERAL ROAD FUNDS.

Secretary of Agriculture Apportions Money Among States for Ensuing Fiscal Year.

The Federal appropriation for the fiscal year ending June 30, 1918, of $10,000,000 to aid the States in the construction of rural post roads has now been apportioned among the several States by the Secretary of Agriculture, in accordance with the terms of the Federal-aid road act. Before making the apportionment the Secretary, in accordance with the provisions of the act, deducted 3 per cent of the appropriation, or $300,000, to meet the cost of administering the act. The remaining $9,700,000 has been divided among the States as the act prescribes—one-third in the ratio of area, one-third in the ratio of population, and one-third in the ratio of mileage of rural-delivery routes and star routes. Apportioned on this basis, the money is divided as follows:

State.	Sum apportioned.	State.	Sum apportioned
Ala	$208,297.80	Nev	$128,796.60
Ariz	137,027.04	N. H	41,993.24
Ark	165,378.20	N. J	118,425.36
Cal	302,127.84	N. Mex	157,475.62
Colo	167,380.28	N. Y	501,440.54
Conn	62,180.88	N. C	228,763.84
Del	16,368.74	N. Dak	152,286.12
Fla	111,952.54	Ohio	373,810.84
Ga	268,658.96	Okla	230,278.00
Idaho	120,927.00	Oreg	157,374.74
Ill	441,852.46	Pa	461,288.34
Ind	271,495.24	R. I	23,331.42
Iowa	292,351.20	S. C	143,615.28
Kans	286,414.80	S. Dak	161,892.04
Ky	194,943.82	Tenn	228,306.96
La	134,949.32	Tex	583,855.62
Me	96,903.00	Utah	113,900.30
Md	88,094.44	Vt	45,688.94
Mass	147,701.90	Va	199,321.42
Mich	291,567.44	Wash	143,768.56
Minn	284,788.12	W. Va	106,540.92
Miss	177,811.68	Wis	256,722.14
Mo	339,440.82	Wyo	122,393.64
Mont	196,574.38		
Nebr	213,541.62	Total	9,700,000.00

This is the second apportionment to be made under this act. For the fiscal year ending June 30, 1917, the appropriation was $5,000,000. For succeeding years the appropriation is as follows:

1919	$15,000,000
1920	20,000,000
1921	25,000,000

These sums do not include the $1,000,000 which is appropriated each year for 10 years for the development of roads and trails within or partly within the national forests.

SOY BEAN USEFUL CROP.

May Be Utilized in Greater Number of Ways than Almost Any Other Agricultural Product.

The soy bean, which already is one of the most important cash crops of Asia and which promises to take an important place in the agricultural industry of the United States, may be utilized in a greater number and a greater variety of ways than almost any other agricultural product. The whole beans may be utilized for food as are the seeds of other legumes, or the oil alone may be consumed. The oil resembles that of cotton seed in many ways, but is of a more pronounced drying character. In addition to its availability as a food, soy-bean oil has found important uses in the markets of the world for making paints, varnishes, soaps, rubber substitutes, linoleum, waterproof goods, and lubricants. It is also used in the Orient for lighting and in the manufacture of printing ink.

In Japan the soy bean forms one of the most important articles of food in use. It is one of the principal ingredients in the manufacture of shoyu (soy sauce), miso (bean cheese), tofu (bean curd), and natto (steamed beans). The beans are eaten also as a vegetable and in soups; sometimes they are picked green, boiled, and served cold with soy sauce, and sometimes as a salad. A "vegetable milk" is also produced from the soy bean, forming the basis for the manufacture of the different kinds of vegetable cheese. This milk is used fresh, and a form of condensed milk is manufactured from it. All of these foodstuffs are used daily in Japanese homes, and for the poorer classes are the principal source of protein.

The use of the meal remaining after the oil is extracted from soy beans has become an important factor in several European countries during the last few years, and to some extent in America, as a food of low-starch content. Soy beans contain at the most but a slight trace of starch, and extensive experiments in America and Europe indicate the value of the bean and its products as the basis of foods for persons requiring a low-starch diet. Soy-bean flour enters largely as a constituent in many of the so-called diabetic breads, biscuits, and crackers manufactured as food specialties. The flour or meal can be used successfully in the household as a constituent of muffins, bread, and biscuits in much the way in which corn meal is used.

Soy-Bean Milk.

An artificial milk like that manufactured in the Orient has been produced in small quantities in the United States, and recently a factory has been equipped to make this product. Such milk can be used for cooking in the household and by bakers, confectioners, and chocolate manufacturers. If, however, the milk from the soy bean is used in the manufacture of products as a substitute for milk, the labels of such products should indicate that the substitution has been made; otherwise it would constitute adulteration under the Food and Drugs Act.

In addition to its uses for flour and milk, the soy bean can be prepared as human food in numerous ways. The green bean, when from three-fourths to full grown, has been found to compare favorably with the butter or Lima bean. The soy bean has been utilized not only in the United States but in European countries as a substitute for the coffee bean. When roasted and prepared, it makes an excellent substitute for coffee. In Asia the dried beans, especially the green-seeded varieties, are soaked in salt water and then roasted, this product being eaten after the manner of roasted peanuts.

Stock Feed.

The value of soy-bean meal for producing meat, milk, and butter is well established. It is one of the cheapest of the highly nitrogenous feeding stuffs and is therefore one of the most economical for balancing rations deficient in nitrogen. Its use in America is confined at the present time almost entirely to the Pacific States, where it is considered a valuable feed not only by dairymen but also by poultrymen. Owing to its high content of prorein, the meal should be used with the same precautions as are observed with other highly concentrated feeds to avoid digestive troubles. As regards digestibility, soy-bean meal compares very favorably with other oil meals.

The utilization of soy-bean meal for fertilizing purposes has been confined almost entirely to Asiatic countries. Following the recent production in the Southren States of bean cake and oil from American-grown beans, however, fertilizer manufacturers have taken an active interest in the fertilizing possibilities of the meal. Analyses by the United States Department of Agriculture have shown that while soy-bean meal, like cottonseed meal, has a high fertilizing value when applied directly, a more economical practice would be to feed the meal to stock and apply the resulting manure to the soil.

Soy-Bean Oil.

In the United States two methods of extracting oil from soy beans—the hydraulic and the expeller processes—are used by oil mills, the latter producing the highest yields. Extensive tests with domestic beans indicate that 1 ton of seed will yield by the expeller process an average of 30 gallons of oil and 1,600 pounds of meal, the difference (about 175 pounds) representing the loss due to cleaning and the evaporation of moisture driven off after the beans have been crushed and heated.

HOW TO USE SKIM MILK.

Ways in Which This Nutritious Food Material May Be Used to Advantage in Cookery.

There are many places in which skim milk is not used as completely as it might be. On farms there is often more than can be profitably fed to calves or pigs. In creameries much of it is made into cottage cheese, but even then the whey, which is really rich in good materials, goes to waste.

Many people do not realize how nutritious skim milk is. They imagine that because it so generally has little or no commercial value it is hardly fit for human food. As a food it is not so valuable as whole milk, and can not take the place of the latter in the diet of children. Nevertheless, skim milk can be used to great advantage in combination with other food materials, especially in cooking, and is altogether too valuable to be wasted, according to home economics specialists of the United States Department of Agriculture.

A quart of whole milk weighs $34\frac{1}{3}$ ounces, or a little more than 2 pounds, nearly 30 ounces of which is water. The remaining solid matter contains very useful food materials. Slightly more than 1 ounce is protein, a very important muscle builder, and one of the most expensive of the substances needed by the body. About $1\frac{1}{3}$ ounces consists of butter fat, and $1\frac{2}{3}$ ounces of milk sugar. These two materials are used by the body to provide it with energy, much the same as fuel is used to produce steam and power in the engine. The quart of milk also contains about one-quarter of an ounce of mineral matter, small quantities of which are very necessary for the growth and general upkeep of the body.

As the fat is separated to form the cream some of the protein, milk sugar, and mineral matter go with it, but by no means all. The protein remains; therefore a quart of separator-skimmed milk provides slightly more of this indispensable and costly material than does a quart of whole milk. It contains in all about $1\frac{1}{3}$ ounces of protein, $1\frac{1}{4}$ ounces of milk sugar, about one-quarter of an ounce of mineral water, and a little fat, the last named depending, of course, upon the completeness of the separation. This means that, quart for quart, it would furnish the body with slightly more protein and milk sugar than whole milk does, and practically the same quantity of mineral matter, though far less fat. In other words, as a tissue builder it is equal to whole milk, and as an energy yielder not nearly so good. Since, as a rule, the tissue-building materials are contained in the more expensive foods (meat, eggs, etc.) and the energy-yielding materials can be largely provided by cheaper foods

(bread and other cereal foods, fats, potatoes, etc.) it seems doubly wasteful not to use skim milk.

Those who buy milk seldom have much skim milk to use unless they follow the custom of skimming their own cream. That there is economy in so doing is shown by the following: A quart of whole milk usually sells for the same price as a half pint of cream, which contains about one-fifth ounce of protein, 1½ ounces of fat, not quite one-third ounce of milk sugar, and a very little mineral substance. If this is compared with a quart of whole milk, which very commonly can be purchased for the same sum, it will be seen that the purchaser in buying a half pint of cream instead of a quart of milk sacrifices nearly an ounce of protein, 1⅓ ounces of sugar, and one-fifth ounce of mineral matter. He gets, of course, a trifle more fat—about one-fifth ounce, or a level teaspoonful—but this is small in comparison with what is sacrificed. Some people, therefore, buy whole milk instead of cream in order to have for family use the nourishment contained in the milk after it has been skimmed. Home-skimmed milk is, of course, richer in fat than that which has been skimmed by separator, but it can be used in the same way.

The uses of skim milk are many and in cooking it adds to quality as well as to food value. If used in place of water in bread it adds about as much protein to one pound of bread as there is in an egg. Skim milk used in place of the usual half milk and half water, of course, increases the quantity of protein in a loaf by the amount that is contained in half an egg. The saving involved in the use of skim milk in bread, however, is small compared with that involved in its use in the preparation of cereals, for, while in bread the milk is only about one-third of the flour, in the preparation of cereals the volume of milk is usually three or four times that of the cereal. To cook a cupful of cereal in 3 cupfuls of skim milk instead of 3 of water, adds as much protein as that contained in 3 eggs.

There are many dishes which may be described as vegetable milk soups, usually made by combining milk and the juice and pulp of vegetables. This mixture is then thickened with flour and starch and enriched with butter or other fat. If a fire is kept all the time and the cost of fuel need not be taken into consideration, the following method is recommended as a means of utilizing skim milk: Chop the raw vegetable or cut it into small pieces. Put it with the skim milk into a double boiler and cook until the vegetable is tender. The mixture can then be thickened and enriched as described above. By this method no part of the vegetable is thrown away and the liquid of the soup, instead of being part milk and part water, is all milk. A soup so made, therefore, usually has about twice as much protein as that made in the other way, and has the additional advantage of a particularly good combination of mineral substances, for milk is rich in calcium and phosphorus, and the vegetables are rich in iron.

In making these soups use is made of many of the parts of the vegetable that are ordinarily thrown away, namely, the outer and tougher leaves of lettuce, which has a higher iron content than most other vegetables; the tops of celery; and even the tops of young onions. Small quantities of cooked vegetables left over from other meals may be utilized in these and in other kinds of soup.

If in making these soups the vegetable is chopped finely in the meat grinder, they need not be strained before being served. If the vegetable is not so chopped, the soup may be put through an ordinary strainer, or such vegetables as carrots or potatoes may be cut into slices and left in the liquid, in which case the dish resembles a vegetable chowder. These soups may be thickened with stale bread.

Soup Recipe.

1 quart of spinach (4 ounces).
1 thin slice of onion.
2 slices of stale bread (2 ounces).
1 quart of skim milk.

Put the spinach and onion through the meat chopper following them by the bread, in order that there may be no waste. Put into a double boiler with the milk and cook until the spinach is tender.

There is a class of extremely valuable dishes which are sometimes called "cereal milk puddings," usually made by cooking equal volumes of a cereal (usually rice) and sugar in 12 times the volume of milk—for example, one-fourth cupful of rice, one-fourth cupful of sugar, and 3 cupfuls of milk. When a fire is kept constantly and the cost of fuel need not be considered, such a dish may be made with skim milk, and very much more than 3 cupfuls of the milk used. As the water evaporates, the dish becomes richer and richer in protein.

Oatmeal may be substituted for rice in the above-described pudding and adds somewhat to the protein value, though the quantity of cereal used is so small that this is not important.

Thin cereal-milk puddings, made by slowly cooking down until thick ten or twelve parts of skim milk and one of rice, oatmeal, or similar cereal, may be used in place of cream, with stewed fresh fruits or cooked dried fruits or baked apples.

GAME AND BIRD RESERVATIONS.

Five big-game preserves and 67 bird reservations are maintained by the Biological Survey of the department. The mammal reservations include the Montana Bison Range, the Wind Cave Game Preserve in South Dakota, the Niobrara Reservation in Nebraska, the Elk Refuge in Wyoming, and the Sullys Hill Game Preserve in North Dakota. The Niobrara Reservation was intended as a bird reserve, but has been stocked with big game and is at present maintained chiefly for buffalo and elk, according to the annual report of the chief of the Biological Survey, just issued. In the first three reservations mentioned the herds of buffalo have shown a notable increase since their establishment a few years ago, says the report, and now include 207 head, or more than a third of all the buffalo which now belong to the Government. The elk number about 160 and the antelope 40, making a total of about 400 head of big game.

The number of bird reservations was increased during the year by the addition of the Big Lake Reservation in Arkansas. Sixty-seven reservations are now maintained primarily for birds. The report urges the importance and necessity of retaining as breeding grounds for water fowl and other birds tracts of land which are not especially valuable for agricultural purposes. The area of marsh land necessary for breeding grounds is insignificant, it is said, in comparison with the benefits which will accrue to the public through the increase in our supply of game birds.

CIVIL SERVICE EXAMINATIONS.

Assistant Engineer in Forest Products.

A competitive examination for Assistant Engineer in Forest Products, open to men between 20 and 40 years old, will be held by the United States Civil Service Commission at a large number of places throughout the United States February 27 and 28, 1917. From the register of eligibles resulting from this examination certification will be made to fill an existing vacancy in this position in the Forest Products Laboratory at Madison, Wis., or for similar work elsewhere. This laboratory deals with economic and technical problems concerning the utilization of the products of the forests of the United States. Competitors will be examined in the technique of drying, treating, and testing timber; mechanics and mathematics; and drafting and machine and structural design. To be eligible applicants must have graduated in mechanical or civil engineering from a college or university of recognized standing, or must be senior students in such an institution, pursuing studies which will entitle them to such a degree, or must have had four years' practical work in design and construction equivalent to such training.

Biological Assistant.

A competitive examination for Biological Assistant, open to men between 20 and 40 years old, will be held by the United States Civil Service Commission at a large number of places throughout the United States February 27, 1917. The duties of this position in the Bureau of Biological Survey of the Department of Agriculture are to demonstrate methods for the control of harmful mammals in farming communities; and to take charge of field parties in national forests and on public lands engaged in the work of exterminating prairie dogs, ground squirrels, pocket gophers, jack rabbits, and other mammals injurious to agriculture, grazing lands, and forestry. Competitors will be examined in practical questions on our native harmful and beneficial mammals, acquaintance with their habits and with the nature of the damage they do, and practical questions on methods of control for such pests. To be eligible applicants must have had two years' education above the eighth grade, or one season's actual experience with a State, county, or other organization authorized for the control of harmful mammals. Additional credit will be given for training in an agricultural institution.

Persons who meet the requirements and desire either of these examinations should apply at once to the United States Civil Service Commission, Washington, D. C., for Form 1312, stating the title of the examination and the date.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., FEBRUARY 14, 1917. No. 28

SPRING POULTRY WORK.

Pullets for Egg Laying Next Fall and Winter Should Be Hatched Early—How to Use an Incubator.

The poultry raiser on farm or in city who wishes to produce fall and winter eggs with a by-product of spring "fryers" should begin now to plan for the early setting of eggs, say poultry specialists of the United States Department of Agriculture. In the States of the extreme South settings should be made from the first to the middle of February; in the central group of States, from the early part to the last of February; and in the northern tier of States, from the latter part of February to the early part of April. With settings timed on this schedule the chicks will hatch in ample time to allow their maturity before cold weather. The pullets from these broods should lay during the late fall or early winter when eggs are scarcest.

The setting schedule outlined also will permit the development of early spring "fryers." The young chicks will be developed to the point where they may be turned out on the ground by the time vegetation is out, and so may augment their feed with green stuff. The smaller breeds of chickens can be hatched later than those which are larger and slower to develop.

Incubation.

One difficulty in setting eggs in spring at selected dates if the natural system of incubation is followed is in finding broody hens at the proper times. If natural incubation is depended upon exclusively it probably will be best for the poultry raiser to disregard dates and make settings whenever broody hens are available. A good nest for setting is made of wood, 15 inches square and about 15 inches high, with a top. The front is open except for a board 6 inches high. Three or four inches of damp earth should be placed in such a nest and on this straw, hay, or chaff should be firmly packed. The hens should be dusted thoroughly with insect powder. It is a good plan, also, to sprinkle a little of the powder in the nests.

Using an Incubator.

The suggested schedule can be followed exactly if an incubator is used. The machine should be operated in a warm room, preferably a cellar, as a protection against outside temperature changes. It should be disinfected thoroughly before being used, with a solution of a reliable coal-tar disinfectant. Instead of using such a solution a small receptacle containing one-half ounce of permanganate of potash on which one-half ounce of formalin has been poured may be shut up in the incubator. The resulting gas will thoroughly disinfect the machine. After disinfection the incubator should be run empty for several days to get it into good operating condition. After the eggs are in place the temperature should be held at from 101½° to 102° F. the first week, 102° to 103° the second week, and at 103° the third week.

The eggs usually are turned for the first time at the end of the second day and twice daily through the eighteenth or nineteenth day. The eggs are cooled outside the hatching chamber once daily after the seventh and up to the nineteenth day. Moisture should be furnished in artificial incubation in the South, in high altitudes, and when the incubator room is dry. This may be done by sprinkling the eggs with warm water or by placing a wet sponge or pan of water under the egg tray.

During the hatching period carefully fill the lamp and trim the wick each day. It is best to trim the wick by scraping off the burnt portion rather than by cutting the wick. The lamp should not be filled entirely. After the lamp is filled it should be closely observed for a time to make sure that the flame does not get too high.

The Bureau of Soils is investigating city wastes, particularly garbage, with the idea of recommending methods of recovering nitrogenous fertilizer materials.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

GARLIC FLAVOR IN MILK.

Method Suggested for Prevention of Loss from Tainted Dairy Products—Eradication of Wild Onion.

During the spring of the year there is usually much trouble, especially in the Middle Atlantic States, with garlic flavor in milk. Milk dealers refuse to accept such milk, and if the product is marketed direct to the consumer there is usually a considerable loss of trade, owing to the flavor which is found not only in the milk and cream but also in the butter. Dairymen will do well to study this condition, which may result in serious financial loss.

Many pastures are so badly infested with wild onion or garlic that the milk is tainted if the cows are allowed to remain in the pastures until milking time. The dairyman should endeavor to eradicate the pest, if possible, but in the meantime some measures should be adopted to prevent losses from tainted milk.

The Dairy Division of the United States Department of Agriculture has conducted some experiments at the Beltsville (Md.) farm in order to determine the length of time that must elapse between the feeding of wild onion and milking time. In some of the feeding tests one-half pound, in others one pound, of wild onion tops were fed at different lengths of time before milking. It was found that increasing the length of time between feeding and milking decreased the unpleasant odor and flavor. There was only a faint onion flavor in the milk drawn from cows four hours after feeding, and even this almost disappeared when the milk had stood for four hours. In all cases the cream was more noticeably affected than the skim milk; in some cases there was no taint whatever in the latter.

The results of these feeding trials show that the dairyman should keep his cows from pastures badly infested with wild onion for at least four hours before milking in order to avoid onion-flavored milk. This may not be a safe rule, however, if any of the cows should eat more than a pound of the onion tops. The department suggests that every farmer with onion-infested pastures should test the question for himself and determine how long it is safe to allow the cows in the pasture before milking.

76247°—17

The wild onion, which when taken by cows gives an unpleasant odor and flavor to milk, matures in midsummer. Each plant at that time has at its base a large, soft-shelled bulb and several smaller, hard-shelled bulbs. The soft-shelled bulb germinates in the fall, and by the following spring the new plant has begun to form new bulbs. Most of the hard-shelled bulbs, however, remain dormant until the following spring. There is, therefore, an overlapping of generations, which accounts for the remarkable persistence of the wild onion. To eradicate this weed from a piece of land it is necessary to take this fact into consideration. The land should be plowed late in the fall as deeply as may be necessary to bury the plants that have come up from the soft-shelled bulbs before they start to produce young bulbs. The next spring, in order to bury plants from the hard-shelled bulbs, the land should be prepared as early as possible for a cultivated crop by harrowing, preferably with a disk, the land being gone over frequently enough to prevent any top growth of wild onion. After planting the crop, corn or cotton being the best for this purpose, the cultivations should be made with the purpose of keeping down top growth of the onion at all times. An implement of the sweep type, or an ordinary cultivator to which sweeps or weed knives are attached, is the best for this purpose, since it cuts the onion stems off below the surface. These sweeps vary in length from 6 to 18 inches, and may be fitted to any of the modern cultivators in place of the shovels. They should be wide enough to overlap, so that none of the weed stems can slip through. If the work is well done the weed will be entirely killed by "laying by time." If it shows up again in the fall, however, the process of late fall plowing, followed by a cultivated crop the next spring, should be repeated.

Wild Onions in Pastures.

This weed occurs commonly in pastures, and if a pasture is badly infested all that can be done to eradicate the pest is to plow up and follow the cultivation method as outlined above. If a pasture is not so full of it as to warrant such a radical course, each clump of the onion may be attacked. This may be done by going over the pasture several times during the fall, winter, and spring with a mattock or similar tool. Unless the entire root system is dug out, however, the plant will return. In place of this method it is sometimes practicable to use a chemical plant poison, such as crude carbolic acid.

Wild Onion in Wheat.

The bulblets produced on the top of the onion stems are about the same size and weight as the wheat grains, so that they are very difficult to separate from the latter. This fact results in serious loss to wheat growers, since the bulblets contaminate the flour and gum the mill rollers. Farmers suffer a loss of from 20 to 50 per cent when such wheat is offered for sale. Fields should be cleaned of the onion by the cultivation method before they are seeded to wheat. In the South Atlantic States, however, the seeding may be deferred until so late in the fall that the soft-shelled bulbs will have time to germinate and may then be destroyed before the grain is put in. The hard-shelled bulbs will not germinate early enough in the spring to mature seeds before the wheat is harvested.

It is also necessary to use wheat for seed that is free of the wild-onion bulblets. Many millmen will be interested in knowing that this department has worked out a method of separating the onion bulblets from wheat on a commercial scale.

Farmers wishing to eradicate the wild onion, or garlic, from their fields, will find additional information in Farmers' Bulletins 608 and 610, which can be obtained free by writing to the Department of Agriculture, Washington, D. C.

FIFTY YEARS OF WHEAT GROWING.

Figures giving the yield and value of the wheat crop of the United States for 50 years have been published as Bulletin No. 514 by the United States Department of Agriculture. This bulletin covers all the years from 1866 to 1915. It shows that despite the present high prices we have not yet reached the level of those in the years immediately following the Civil War. During the 10-year period from 1866 to 1875 the average price of wheat in this country was 108.6 cents (in gold). For the 10-year period from 1906 to 1915 the average price was only 86.8 cents. The year 1886, in which the Department of Agriculture began its series of continuous reports of the important crops, marked, however, the high level for wheat. From that time, in a number of marked fluctuations, the price dropped until, in the 10-year period from 1886 to 1895, it was down to 68.3 cents. The lowest point ever reached was in 1894, when the average price was 49.1 cents.

On the other hand, the average yield per acre has been steadily increasing. In 1866 it was 9.9 bushels and 16.9 in 1915, an increase of 7 bushels an acre. This increase has, of course, been marked by declines in bad years, but the averages for the five 10-year periods from 1866 to 1915 show a steady increase, from 11.9 bushels, average in the decade 1866–1875, to 15.1 bushels in the decade 1906–1915.

Birds may be attracted about homes by planting trees, herbs, and shrubs which produce seeds or fruits relished by the birds, and by exposing food in artificial devices.

BLACK SIBERIAN HARE.

Name Under Which Certain Rabbits Are Being Exploited as Valuable Fur Producers.

The United States Department of Agriculture during the past few months has received many inquiries regarding the merits of certain rabbits that have been extensively advertised as fur producers. Replies to such inquiries have stated that the demand for rabbit fur is such as to make it pay to save the pelts of domestic rabbits killed for food, but that raising rabbits for the fur alone would be unprofitable with any known breed. Some facts about the trade in rabbit skins will be of interest in this connection.

More skins of rabbits are collected and sold annually then of all other fur animals combined. Before the present war, Great Britain imported each year from 70,000,000 to 90,000,000 skins, while the home production added 30,000,000 more. The imported supply came from Australia and the nearer European countries. France, Belgium, Germany, the United States, and other countries also use large quantities of this fur. The bulk of it is sold in bales, bringing from 10 cents to 50 cents a pound, dependent on color and quality. The better class of skins sell by the dozen, bringing from 50 cents to $1, that is, less than 10 cents each.

Baled rabbit furs are bought largely for felting purposes, the fur being made into cloth or coarse hats, while the skins are utilized for manufacturing glue. Fine hats are made of nutria (the fur of the South American coypu) or of nutria and rabbit fur mixed. The fur of the common wild rabbit of America does not felt well and is in slight demand. Whole skins of these animals seldom sell for more than 1 or 2 cents each.

The better kinds of rabbit skins are used for making fur garments, which, when made up, are commonly sold as "cony," but often under other trade names. White skins are made up in imitation of arctic fox, or, sheared, in imitation of ermine. Gray rabbits are dyed brown or black and become "Baltic black fox" or "Baltic brown fox"; seal-dyed, they become "inland seal," "electric seal," "coast seal," or "near-seal." Reputable furriers avoid such names, or, if they use them, frankly explain that the goods are cony or rabbit. These garments, while handsome and comfortable, have little durability and are therefore cheap.

Statements to the effect that certain breeds of rabbits produce pelts of high market value are unwarranted. The long-haired breeds, such as the Angora and the Siberian (both white animals) have poor

pelts and the hairs are not well set in the skins. The short-haired varieties are much alike as to strength of pelts, but vary considerably in color. The English black and white has striking colors that might appeal to the fancy of individual wearers of fur garments, but they are not popular in the fur trade. Skins of piebald rabbits of any shade sell for less than those of solid colors. There is also a difference in quality of fur between hutch rabbits and those kept in the open, the latter having the better pelts.

Besides exaggerated statements as to value of fur, advertisements of fur rabbits contain totally false claims as to the origin of animals offered for sale. This practice is not a new one, for about 60 years ago, when the now well-known Himalayan rabbit was first bred in England, the statement that it originated in the Himalayan Mountains was believed by a fellow of the Zoological Society of London, who described and figured the animal in the society's journal as a new species. Rabbits recently advertised as fur animals are said to have been imported directly from Siberia in one instance, and from Mongolia in another. The further statement that the animals exist in these countries in a wild state is advanced. As a matter of fact well known to naturalists no wild rabbits occur in either country and the few species of hares found there are small gray animals that turn white in winter. The support of the fanciful testimony of an unknown naturalist who claims to have resided in Siberia and to have observed the animals in the wild state does not help the case.

So far as the "black Siberian hare" is concerned, any experienced breeder of rabbits can readily identify the animals at first sight. They are undoubtedly the common European rabbit of the Flemish giant breed. In this variety black is a constantly recurring color and sometimes appears among litters of the purest-bred strain. These black individuals are usually regarded by fanciers as undesirable and are discarded. However, if the black stock be chosen for reproduction, a black strain of Flemish giants is obtained in which bluish-gray individuals recur from time to time, as several breeders in the United States have proved. Such a strain of Flemish giants is now offered as a new species imported directly from Siberia, a country without rabbits unless carried there as domestic animals.

It is not to be inferred, however, that black Flemish giant rabbits have no fur value. On the contrary, owing to their great size and solid color, the skins will probably sell for more than those of most other breeds. All known breeds of domestic rabbits belong to a single species, the European rabbit, whether they are known as Belgian hare, Flemish giant, Siberian, Himalayan, Dutch, Japanese, Kai-Gai, or any other name, and the attempt to palm any of them upon the public as a new species imported from a portion of the world not inhabited by rabbits is wholly unwarranted and to be severely condemned.

NEW EGYPTIAN COTTON.

Plant Specialists Have Bred Earlier, More Productive, and Better Fibered Type.

After 15 years of experimentation in breeding and selection, plant specialists of the U. S. Department of Agriculture have succeeded in developing a second new variety of the valuable Egyptian cotton grown in this country. The new variety is considered to be superior in several respects to the variety now in use. Sufficient seed of the type, which is known as the Pima, has been raised to plant a relatively large area and will be used during 1917 in the Salt River Valley of Arizona, the center of Egyptian cotton culture in this country. It is hoped that from this crop sufficient seed will be obtained to plant the entire cotton-growing area of the valley in 1918, if the substitution of the new variety for the one now grown is then believed to be desirable.

The variety of Egyptian cotton now being grown in the Salt River Valley is the first new type developed in this country and is known as the Yuma variety. The Pima cotton produces a longer, finer, and lighter-colored fiber than the Yuma, and for this reason should command a better price per pound in the market. Even were there no difference in the value of the fiber, however, the Pima variety should be the more profitable to produce since it is more productive and earlier, has larger bolls, and is more easily picked owing to the greater freedom of the plants from vegetative limbs.

The Pima variety originated in 1910 with a plant selected out of a field of Yuma cotton grown at the Cooperative Testing and Demonstration Garden at Sacaton, Ariz., and has been carefully tested since. It is much more uniform and truer to type than the Yuma. The Pima was given its first tests on a field scale in 1916, when 275 acres were planted. The plantings in 1917 will be in a continuous area so as to avoid cross-pollination with Yuma cotton. Egyptian cotton is especially liable to cross-pollination between types, an occurrence which contaminates and is likely to ruin a good variety. The planting of the Pima cotton in a continuous area will also facilitate ginning under conditions making possible the avoidance of the mixture of Pima and Yuma seed.

The extermination of ground squirrels from approximately 209,000 acres of Government land was accomplished last year by the Biological Survey.

EGGS IN THE DIET.

Food Value, Relative Freedom from Waste, and Ease of Preparation Often May Offset High Prices.

Because of the peculiar food value of eggs, their relative freedom from waste, and the ease with which they may be prepared, their use as meat substitutes at least is often desirable, even when a consideration of their price alone would not so indicate. This is stated in a recently published professional paper of the Office of Home Economics of the United States Department of Agriculture, Department Bulletin 471. It is pointed out, however, that while this is true of eggs served as one of the principal dishes of a meal, it often is not true of eggs used in cakes, puddings, and other desserts along with meats. It is in the latter use of eggs that the housewife who wishes to economize can try especially to curtail consumption. A fact which makes this latter practice easier is that with the present availability of baking powders, corn starch, gelatin, etc., the use of eggs to impart lightness or to thicken liquids is not now as essential as it was in the past.

Food Elements in Eggs.

The principal food element furnished by eggs is protein, the nitrogenous tissue-building element whose presence in considerable proportions also gives meats, fish, milk, cheese, etc., their special food value. Eggs, therefore, can be substituted in the diet for the latter foods without materially altering the proportion of protein consumed. In addition to protein, eggs also furnish fat and a number of valuable mineral elements, including sulphur, phosphorus, iron, calcium, and magnesium, in an easily assimilable form, and are believed also to be rich in certain essential vitalizing elements called vitamins.

Like milk and unlike meats eggs do not contain substances convertible in the body into uric acid. Their shells constitute the only waste materials. Ninety-seven per cent of the portion eaten—a high proportion compared to other foods—is digested. No extended cooking is necessary for eggs, and there is therefore a saving of time, labor, and fuel in their preparation when they are compared with many other foods. For all these reasons eggs deserve an important place in the diet for use at times in place of other foods rich in protein, provided egg prices are not so high as to outweigh the other considerations.

Wholesomeness of Eggs.

Though wholesome when fresh and clean, eggs may be decidedly unwholesome when

old or dirty. The housewife should be careful when buying, therefore, to choose eggs which are as clean and fresh as possible. Similarly, the producer of eggs should keep nests clean and sanitary and should collect eggs frequently. It is also well to insure the production of eggs with good keeping qualities by producing only infertile eggs after the hatching season.

How to Select Eggs.

In addition to cleanliness and freshness, the housewife when purchasing eggs should consider size and freedom from cracks. Eggs vary so in size that a dozen large and a dozen small eggs purchased at the same price per dozen may differ as much as 25 per cent in the value of the food elements furnished. Perhaps the fairest way to buy or sell eggs is by weight. Because of the wide variations in the size of eggs, it is also coming to be recognized that more accurate results in recipes can be obtained by weighing or measuring the eggs out of their shells. Cracked eggs are undesirable because the breaking of the shell makes possible the entrance of bacteria and filth.

Cold-Storage Eggs.

Because fewer eggs are produced in the most populous regions of the country than are consumed there, and because the seasons have a marked effect on the number of eggs laid, city housewives must use cold storage eggs during some periods of the year if they are to supply their tables at all with this food. The fact that eggs have been held in cold storage does not necessarily mean that they are of low quality. Carefully handled cold-storage eggs often are of better quality than fresh local eggs that have been improperly cared for.

Home-Preserved Eggs.

Housewives will often find it advantageous to preserve their own eggs in the home, purchasing them when the supply is abundant, and packing them in a solution of waterglass or lime water, or covering them with paraffin or varnish. Such eggs can be kept in good condition for a number of months. For current use fresh eggs usually can be kept satisfactorily for two or three weeks without such treatment, in a refrigerator or dry, cool cellar. If infertile, such eggs may be kept still longer.

The best time of seeding alfalfa for the States of Ohio, Indiana, Illinois, Iowa, Missouri, and Kentucky is about the middle of August, and for southern New Jersey, southern Maryland, Delaware, Virginia, Arkansas, Tennessee, and the Gulf States from the middle of August to the middle of October, depending upon the latitude. The sowing should always be done sufficiently early to permit of a good top growth of the plants before winter sets in.

MARKETING BUTTER.

Creameries Can Improve Conditions by Standardizing the Quality and Packing of Their Product.

The standardization of butter packages and the production of a more uniform quality of product are two requirements of butter markets to which creameries need to give consideration if they wish to improve conditions for the marketing of their butter, say specialists of the Office of Markets and Rural Organization of the United States Department of Agriculture in Department Bulletin 456, recently issued. On the Pacific coast a "cube," varying in capacity from 63 to 80 pounds of butter, is used. The creameries of the Middle West usually use the 63-pound ash tub, while in New England spruce tubs varying in capacity from 10 to 60 pounds are used. On the Pacific coast a long, flat carton is used as a consumer's package, while in New England a flat, rather broad carton is used. In the Middle West a standard carton $2\frac{1}{4}$ by $2\frac{1}{4}$ by $5\frac{3}{8}$ inches is used.

At certain seasons the market specialists found on the markets an increasing quantity of an inferior quality of butter which is known as "undergrades." This inferior quality, it developed, is often due to the use of cream of poor quality and, to some extent, to faulty methods of manufacture. The more common faults observed in the quality of this butter were soft, leaky, open body; too much or not enough salt; too high or too light color; metallic flavors; high acid, unclean, and old cream flavors; streaks and mottles; mold on butter; also moldy and dirty packages. Butter possessing such faults, although not always classed as "undergrades," is often discriminated against by the critical buyer. During those seasons when the market receipts are heavy and the market is weak such butter can be moved only at low prices, and often sells at 6 to 8 cents below the better grades.

In the shipment of butter to market, according to the bulletin, country creameries situated close together may often effect economies in transportation by cooperating in obtaining special scheduled "pick-up" refrigerator-car service and by assembling local shipments into carload lots which may be shipped at lower freight costs.

Many country creameries, it was found, consigned their butter to wholesale butter receivers who often function as jobbers, while the tendency among the larger creameries and, to some extent, among smaller ones, is to distribute directly to the retailer. The grading and handling of bulk butter would be greatly facilitated, it is pointed out by the experts, if the consecutive numbers of the different churnings of a creamery were stamped on the containers.

Approximately one-tenth of the butter received in the larger markets is placed in cold storage, the bulletin states, and is held for an average period of six months. The cost of storing butter approximates one-fourth of a cent per pound per month. In the market distribution of creamery butter there is at present a tendency toward the more general use of consumers' packages, usually of the 1-pound size.

It is pointed out by the specialists that the establishment of brands is essential for effective advertising. Salesmanship is also a vital factor in successful market distribution. It is highly important in marketing a branded product that a sanitary and attractive package be used and that a certain standard of quality in the product be maintained.

DIARIES FOR FARM ACCOUNTS.

A number of ways in which farmers may use a diary in keeping accounts of their farm business are suggested in a new Farmers' Bulletin, No. 782, prepared by the Office of Farm Management, United States Department of Agriculture. Many successful farmers, it is said, have found that a diary is sufficient to enable them to keep track of their affairs without compelling them to devote an undue amount of time to elaborate accounts. There are two classes of records in which farmers are particularly interested: (1) Receipts and expenditures; and (2) the records of work and production, such as the dates of planting and of harvesting, crop yields, live-stock feed, etc. In many cases the diary has been found to be the most convenient means of keeping these records. The new bulletin contains a number of blank forms and other information in regard to the use of the diary in this connection.

CIVIL SERVICE EXAMINATION.

An open competitive examination for Architectural Assistant in Forest Products, for men over 21 years old, will be held by the United States Civil Service Commission at a large number of places throughout the United States, February 27 and 28. The duties of this position involve the making of investigations and experiments in the fireproofing of wood, a study of the application of the results to buildings and building construction, and the introduction of the ideas developed to architects. Competitors will be examined in the practice of architecture and construction; the technique of drying, treating, fireproofing, and testing timber; mechanics; and mathematics. Education, training, and experience also will be considered. To be eligible applicants must have graduated in architecture from a technical school of recognized standing and must have had at least one year's experience in an architect's office. Persons who meet the requirements and desire this examination should apply at once to the United States Civil Service Commission, Washington, D. C., for Form 1312, stating the title of the examination and the dates on which it is to be held.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., FEBRUARY 21, 1917. No. 29

HATCH CHICKENS EARLY.

Fresh Eggs Will Be Scarce Next Fall and Winter—Remedy Is in Hands of the Poultry Man.

Did it ever occur to you that nature requires her children to take an annual vacation? She does, and nowhere do human beings puzzle their brains over this fact more than when the hens begin their yearly holiday. This vacation is technically called the "molting season." It begins during the late summer. The hens stop laying, and change their suits of feathers for new ones. Usually they consume three or four months in the process. Most of us know this perfectly well, but are apt to overlook the fact that a very important feature of the molting period is that egg laying stops. We are unreasonable and expect the hens to lay all the time. When the hens take this vacation new-laid fresh eggs are scarce and remain scarce until the pullets hatched during the preceding spring begin to lay.

The Remedy.

The remedy is very simple, and is under the control of the poultry man. The first step is to have chickens hatched early, so that the pullets begin to lay when the hens begin to molt. This is not difficult. Pullets of the American breeds begin laying at about 7 months of age. Leghorn pullets begin when about 6 months old. North of the Ohio River this means that all hatching must be over by May 1 at the latest. The best plan is to have the chickens coming at intervals during March and April. The earliest hatched pullets will, of course, begin to lay first. If any of them begin to molt, their places will be taken by the later ones and a steady supply of eggs will be more certain.

The Difficulty.

The difficulty in the way of the practical application of this matter is that so many poultry keepers are dependent on hens for hatching. As long as we have late hatched chickens we will have late sitters. The poultry keeper who wants to change from late hatching to early hatching must therefore either get broody hens from some one else or use an incubator. After he has "changed the dates" on his flock he will have no trouble, especially with the American breeds.

Can It Be Done?

Every progressive poultry raiser who has tried it, every agricultural college and the Government, have data showing that early hatching will produce fall and winter layers. In the Government flock during the past winter the pullets of the entire flock averaged over 20 per cent in egg production, and some pens made 35 per cent. That means, in plain language, that the egg production for all the pullets was one egg daily for every five hens, and for some pens one egg daily for every three hens. This, too, when fresh eggs sold up to 75 cents per dozen in Washington. This could not have been done except by early hatching.

Investigation of serious losses from watermelon rot in melons in transit to northern markets show that at least 90 per cent of the loss in the cases investigated was due to a stem-end decay caused by a species of Diplodia. Field experiments to control this fungus yielded promising results, according to the annual report of the Federal Bureau of Plant Industry.

The hand lens will be found very useful in detecting dodder and other weed seeds in alfalfa seed. The general quality of unadulterated seed can be estimated on the basis of color. Fresh seed is light olive green and gives a bright glossy surface when rubbed with the hand. Alfalfa seed which is of any shade of brown is questionable. One should not purchase seed when the sample contains any considerable percentage that is discolored.

THE WEEKLY NEWS LETTER is designed to convey to the voluntary Crop Correspondents and to the personnel of the Department news of the important current activities of the Department and practical directions for the improvement of farm practice. It is sent also to agricultural papers and newspapers with the privilege of reprinting with or without credit. The edition is necessarily limited, the object being to make those who receive the publication disseminating centers of information for their communities.

TUBERCULOSIS OF HOGS.

Causing Millions of Dollars Loss Annually—Prevention Practicable and Relatively Easy.

To rid the country of tuberculosis of hogs, a disease which is costing millions of dollars annually, is practicable and relatively easy. Extermination should be attained without delay before the disease, which appears to be increasing, has gained too much headway, is the advice of the specialists of the United States Department of Agriculture. The official figures show that 9 per cent of the hogs slaughtered during the fiscal year 1916 at establishments under Federal meat inspection were affected with tuberculosis in some degree. In the case of hogs from certain localities, especially some of the dairying sections, however, over 25 per cent, or one out of four hogs slaughtered, had the disease. In fact, so serious has hog tuberculosis become in some localities that hog buyers for packing houses are avoiding certain regions known to be badly infected, and some packers already are buying hogs subject to post-mortem inspection, with the loss for tubercular hogs falling on the feeder. Other buyers who do not buy subject to post-mortem inspection protect themselves by offering a lower price for all hogs, in which case the careful breeder suffers equally with the careless one. The following information regarding the control of this disease is taken from Farmers' Bulletin 781, Tuberculosis of Hogs, by John R. Mohler and Henry J. Washburn.

The two principal ways of preventing hogs from becoming tubercular are by keeping them away from tubercular cattle and by cooking or pasteurizing all skim milk and cooking all garbage before it is fed to the hogs.

On dairy farms, unless the cattle have been tuberculin tested and are known to be free from disease, hogs should never be allowed to follow the dairy cattle or to drink raw milk. In any event, it is safer to cook skim milk or buttermilk or to pasteurize it, by holding it at 145° F. for 30 minutes or at 176° F. for one minute. That raw milk from tubercular cows will convey the disease to hogs is fully established by adequate tests. Raw milk of any kind from a creamery is particularly dangerous for hogs, because if there is but one tubercular herd on the creamery route, the milk from this herd may

affect all the skim milk collected at the factory. This explains why tuberculosis is most common in hogs in dairy regions where milk is taken to a central creamery and raw skim milk brought back to the farm from the general stock.

The droppings of tubercular cattle also convey the germs to hogs which are allowed to follow them. For this reason hogs should be kept out of cow lots. On the other hand, hogs can follow steers with comparatively little danger. Steers are not kept indoors as much as dairy cattle and commonly are sold before they are old enough for the disease to develop to the point where it spreads germs through the droppings.

Raw garbage, especially garbage collected from cities, may carry the germs of tuberculosis and infect hogs to which it is fed. The germs in such garbage will be rendered harmless if the garbage is cooked before it is fed. Such garbage, it it has not reached the putrefactive stage, is admirable for feeding purposes, provided the containers are kept always clean. Piggeries, where sterilized garbage is prepared and fed, should be so constructed that they may be readily cleansed.

No hog should be allowed to eat carrion, such as dead chickens or other animals, or to eat raw offal from slaughterhouses or farm butchering. All slaughterhouse waste before being fed should be thoroughly cooked, as this will kill the germs of tuberculosis and other diseases. Careful investigation shows that slaughterhouse tankage does not spread the disease, as the preparation of this tankage involves thorough sterilization by heat.

It stands to reason that no person affected with tuberculosis should be allowed to work among hogs, and that hogs, like other animals, have a much better chance of withstanding this disease if given plenty of fresh air and sunlight and provided with quarters that are kept sanitary.

Where reports from slaughterhouses or other tests indicate that a herd is tubercular, the owner should at once get rid of his entire herd and, after thoroughly disinfecting the premises, introduce new breeding animals. On the other hand, newly purchased hogs should not be introduced into a herd known to be free from the disease until they have been tuberculin tested. The intradermal method of applying tuberculin tests have been tried on hogs and have given excellent results. A farmer wishing to make certain that his swine are free from the disease should avail himself of this test, which is described in the bulletin. Unfortunately few hogs with the disease ever show the presence of tuberculosis by outward symptoms. In fact, in slaughterhouses many hogs, which were found on post-mortem examination to be tubercular, seemed to be the finest animals in the droves. As tuberculosis frequently attacks the hogs on a farm where there are tubercular cattle, the tuberculin test should be applied to all the cattle on the place and all tubercular animals among them should be isolated or destroyed at the time of disposing of the hogs.

A farm may be stocked rapidly with healthy swine after the total slaughter of a tubercular lot. The early age at which the sow may be bred, her capacity for breeding twice a year, and the plural number of her offspring are forceful arguments for the total destruction of every diseased drove of hogs and the breeding up in clean, healthy quarters of a sound, healthy drove in its stead.

Community Action.

It behooves hog raisers to see that their skimmed milk has been properly heated before they feed it. Legislation making such heating by creameries compulsory affords a simple and easy way of greatly reducing hog tuberculosis.

A serious outbreak of tuberculosis among hogs in Switzerland was overcome by boiling all of the separated milk before feeding it to the subsequent litters of young pigs.

The Bureau of Animal Industry is endeavoring to locate infected farms, or at least infected localities, and to ascertain the direct cause of the spread of the disease in these districts. Owing to the number of hands through which hogs go before reaching the abattoirs this is not easy, but it can be and is being accomplished. Already, through cooperation with the State authorities, a large number of infected farms have been definitely located. The conditions on these farms have been investigated, the source of the disease determined, and methods for its suppression recommended. Both the bureau and State officials have been working with these ends in view. When hogs have been found to be tubercular when slaughtered under the Federal meat inspection and the farm from which they came has been located, the State veterinarian is notified. In most States this officer is empowered by law to quarantine any farm when he suspects the presence of a contagious disease thereon. He then applies the tuberculin test to the cattle on the farm and otherwise looks for the source of infection. This frequently results in finding the cattle tubercular.

This cooperation with the State is of great value, and the results would be greater if State legislation were enacted compelling the tagging of all hogs going to slaughter, so that these animals, if found tubercular, could be immediately traced to their point of origin and the source of infection removed.

Sixty-six species of birds common to southeastern United States feed to a greater or less extent on the boll weevil. The most active enemies of the weevil are the orioles and swallows.

POTATO TUBER MOTH.

Destructive Field Pest and Often Seriously Injures Stored Product under Favorable Conditions.

The potato tuber moth in mild, dry climates often works very serious injury to stored potatoes. It also is an annoying and at times a destructive field pest where careless planting and harvesting, combined with proper climatic conditions, give it an opportunity to damage the growing plant. The larva of the moth feeds to some extent on the leaves, but does its principal damage to the plant by mining downward through the stem, killing that section of the plant and greatly reducing the leaf area. In the case of the tuber in the ground or stored, the larvæ channel through the flesh and either ruin the potato and cause it to rot, or render it so unsightly as to make it undesirable for food.

Control of Tuber Moth.

The Bureau of Entomology, United States Department of Agriculture, recently has published Professional Paper No. 427, The Potato Tuber Moth, in which it recommends two methods of control to the potato grower and handler. These are, according to J. E. Graf, author of the bulletin, cultural and harvesting methods which minimize damage and the use of disulphid of carbon to fumigate stored potatoes. The series of experiments indicates that the following measures in the field will do much to minimize the damage from this moth:

1. Plant as deep as practicable (5 to 6 inches).
2. Use ridge culture—i. e., ridge the rows.
3. Harvest as early as possible.
4. Harvest before the potato tops become so dry as to drive the partially grown larvæ to descend and work on the tuber.

In harvesting the tubers several rules must be followed to keep the tubers from infestation:

1. The sacks should *never* be covered with potato tops, as the larvæ leave these when they wilt and enter the potatoes.
2. The sacks should be sewed as soon as possible and hauled from the field.
3. Potatoes should never be left in the field or exposed to the moth overnight.
4. All cull potatoes should be gathered up within two weeks and either fed to stock at once or destroyed. If left in the field they are a menace to the neighbors and to the grower himself for the following crop.

After the potatoes are harvested they should be marketed at once, unless the grower has storage facilities and is willing to take the trouble to treat the potatoes.

The destruction of potato vines after harvest, while it kills all stages of the insect within the vines, will also kill the parasites

which prey on the moth. Destruction of the vines would probably kill more of the parasites than stages of the moth, since the tuber worm is liable to hide under clods and rubbish, while most of those parasitized remain in or on the plants.

Fumigation of Stored Potatoes.

Experiments indicate that carbon disulphid used at the rate of 2 pounds to 1,000 cubic feet of storage space will kill the larvæ and adults and practically all the pupæ and eggs within 48 hours. The potatoes are placed in gas-tight bins, which easily may be made nearly air-tight by lining temporary structures with tarred paper and painting the seams. The carbon disulphid should be placed on the top of the sacks in shallow tin pans. The gas that it generates is heavier than air and sinks through the mass of potatoes. As carbon disulphid vapor is explosive when mixed with air and brought in contact with fire or sparks, or when heated to a sufficiently high temperature, great care should be exercised to keep any spark or fire such as a lighted cigar away from its neighborhood. If tubers are noticeably infested, the fumigation should be repeated in a week in summer or two weeks in winter.

Wherever possible, potatoes should be marketed as rapidly as possible, and infested tubers should never be stored unless they can be fumigated.

ROSE AND PEONY GARDENS.

Department Assembling Collections of the Flowers in Washington, D. C.

Flower lovers are being asked by the Office of Horticultural Investigations of the United States Department of Agriculture to contribute to the test gardens at Arlington, Va., just across the Potomac from Washington, roses and peonies of varieties not now represented in the Government collections. It is the hope of the department to assemble at the Arlington gardens as nearly complete collections of varieties of the two flowers as possible. These collections will be used for comparison and study of conditions under which they thrive best, and also as a basis for plant-breeding work. At the present time approximately 700 varieties of roses and 400 varieties of peonies are growing in the Arlington gardens. These represent about one-half the varieties of each of the flowers believed to exist in the United States.

The Department of Agriculture is creating the test gardens in cooperation with the American Rose Society and the American Peony Society. The rose garden was begun in 1915. The peony collection was started last fall. The majority of the plants have been contributed by nurserymen and florists, though many have been given by amateurs. Express or postal charges are paid by the contributors. Plants should be sent during the dormant season, which lasts from fall to late April. Potted plants may be sent successfully as late as the last of May.

Persons who believe they have varieties of roses or peonies not represented in the Arlington gardens and who wish to contribute to the collections should first write to the Office of Horticultural Investigations, Washington, D. C., offering specific varieties or requesting a list of the varieties desired.

TENTATIVE WHEAT GRADES.

Basis for Proposed Official Standards of the United States for Wheat.

Under authority from Congress contained in the United States grain-standards act, which authorizes the Secretary of Agriculture to promulgate official grades for grain, the United States Department of Agriculture, through the Bureau of Plant Industry and the Office of Markets and Rural Organization, has completed the necessary investigations to justify the offering of a tentative basis for proposed official grain standards of the United States for wheat. To afford interested persons an opportunity to present their views in regard to the grades to be promulgated, hearings are being held in eleven cities in the United States during the month of February, to be followed by a final hearing in Washington, D. C., on March 7.

The tentative basis for the proposed official grain standards for wheat provides classes, subclasses, and grades as follows:

Classes and subclasses.	Grades.
I. Hard red spring:	
(a) Dark hard red spring	1 to 5, inclusive, and sample.
(b) Hard red spring	Do.
II. Durum:	
(a) Amber	Do.
(b) Red	Do.
(c) Mixed	Do.
III. Hard red winter:	
(a) Dark hard red winter	Do.
(b) Yellow hard red winter	Do.
(c) Hard red winter	Do.
IV. Soft red winter	Do.
V. Common white:	
(a) Hard white	Do.
(b) Soft white	Do.
VI. White club	Do.
VII. Mixed	Do.

The tentative grade requirements for the several classes are discussed in Service and Regulatory Announcements No. 19, of the Office of Markets and Rural Organization.

Over half a ton of strychnin was used by the Biological Survey in poisoning ground squirrels on 36,400 acres in North Dakota during the past year.

TO DIVIDE TICK ARMY.

Broad Strip of Free Territory to Serve as Object Lesson in Benefits of Eradication.

The army of cattle ticks is to be cut in half this year and a wedge of tick-free territory driven through the infested area to the Gulf of Mexico. By the end of 1917 it is expected that the entire State of Mississippi will be released from quarantine and a broad high road opened for the unrestricted shipment of cattle to outside markets.

The effect of this upon the whole campaign for the total elimination of the pest throughout the South is expected to be great. In order to secure for the newly freed counties the full benefits of eradication, it has always been the policy to plan, as far as possible, the releases from quarantine so that cattle may be brought in and out without passing through ticky country. The new Mississippi law, however, requiring all tick-infested counties to begin eradication work, enables this policy to be carried out on a larger scale than ever before. Not only will the tick cease to exist for the people of Mississippi, but the results that invariably follow its disappearance will prove a stimulating object lesson for neighboring areas that may still be infested.

These results are too apparent for even the most prejudiced to ignore. For one thing the average value of cattle increases, at once and almost automatically, to an extent which makes the cost of dipping negligible. As to the exact amount of this increase opinions vary. Recently a large number of farmers in freed areas were asked to give their opinions on this point, and the average of their replies was $9.25 a head. This, however, the Federal authorities believe to be a little high for a conservative estimate for the entire South, and they have fixed on $7.50 as a safer figure for general use. The increase varies of course in different localities and in Alabama, for example, it has been placed at $8. On this basis, in the 28 counties which have already been freed in that State the cattle are now worth $5,600,000 more than in the old days. Since the cost of eradication is insignificant in comparison, it is obvious that dipping vats are an investment which returns liberal dividends.

That these dividends are real, not theoretical, is indicated by a corresponding rise in land values. In one Mississippi county the local authorities were not at first convinced that the eradication of the tick actually had put money into the pockets of the people. An investigation showed that the coming of the boll weevil and the consequent falling off in the cotton crop had greatly de-

pressed farm values. After the tick had been eliminated the increased profits from live stock were sufficient to restore the price of land to its former level.

The farmers of Mississippi have not been slow to realize the new opportunity. Fifty-one counties in the State are now free from ticks, and into these a large number of pure-bred animals for breeding purposes have been brought. Both the grand champion international bull and the grand champion international junior heifer are owned in the State, and one Mississippi herd has won more prize money than any other herd of the same breed. Not every farmer, of course, can go in for stock of this character, but the improvement in the general run of cattle is very marked. As long as the tick remained, little or no progress was possible because of the susceptibility of imported breeding stock to the fever conveyed by the tick.

Improvement in the quality of the herds is also opening up new sources of revenue. In Mississippi, for example, 15 creameries are now in operation, and through these the sale of more than 1,500,000 pounds of butter has brought the dairymen over $500,000. Baby beef clubs, too, have been organized in many of the tick-free counties. These are having a marked influence upon the beef industry. One boy said that before he joined the baby beef club he did not know what a fat calf was, for his father never had any such stock.

More profit from better live stock is a prospect that is especially welcome at a time when the boll weevil has demonstrated its ability to interfere seriously with an agriculture based entirely on the production of cotton. Under any circumstances a single-crop system is dangerous, but with the boll weevil it is imperative that there should be more than one source of income. By decreasing the cotton acreage but not necessarily the production of cotton, it is possible to overcome through extra care and labor the damage done by the weevil, and in addition more land is available for the production of food for the family and feed for live stock. To make the latter profitable, the tick must be eliminated. Since the boll weevil insists on coming in, the farmer in self-protection is insisting on the tick going out.

"SOAKED" PEAS AND BEANS.

Reports received by officials in charge of the enforcement of the Food and Drugs Act reveal that owing to the great demand and consequent high prices for canned peas and beans, many canners are putting on the market products made by soaking dried peas and beans and then canning them. The process of soaking gives the peas and beans much the same appearance as the fresh article. Products made in this way may be wholesome, but, it is pointed out, they are generally less desirable than those prepared from fresh peas and beans. Furthermore, if the consumer desires the dried product it is much cheaper to buy the dried peas and beans directly from the grocer and soak them at home. In this way the same article is served at a much less cost.

The Food and Drugs Act does not prohibit the sale in interstate or foreign commerce of canned soaked peas and beans, provided the label on the cans indicates plainly and conspicuously that the contents are made from the soaked, dried product. Consumers can learn by carefully reading labels whether they are getting a product that was made from the dried or from the fresh peas and beans.

TUBERCULOSIS PREVENTION.

Simple Precautions by Which Owners May Keep the Disease from Their Animals.

Tuberculosis is the commonest and most widely prevalent of all contagious diseases. There are many other infections, however, which are much more easily spread and to which the body of the average man or animal is much less resistant. The explanation of these apparently inconsistent facts is to be found in the appearance of perfect health which victims of the disease often possess long after they have become active disseminators of the tuberculosis germ. It is thus possible for the disease to be introduced into herds and to become firmly established in them without the knowledge of the owner.

Live stock can be protected against this insidious disease by the practice of two rules, which may be stated as follows:

(1) Never introduce an animal into a healthy herd or flock unless there is positive proof that it comes from a healthy herd or flock.

(2) Consult your veterinarian regarding the special tests which can be made to prove whether animals are free from serious and common diseases and make sure that no animals are added to healthy herds unless these tests, combined with a period of segregation, show that they are free from infection.

In its insidious and chronic character infectious abortion somewhat resembles tuberculosis. The germs of this disease may be spread by animals that are apparently healthy, and precautions similar to those adopted for tuberculosis should therefore be taken to prevent its dissemination.

The essential cause of tuberculosis is the tubercle bacillus. Unless this germ is present there can be no tuberculosis. Furthermore, as far as we know, the germ does not seem able to grow anywhere but in the bodies of its victims, and it is not able to establish itself in a new victim unless the animal is exposed to it repeatedly or for relatively long periods of time, or under peculiarly unfavorable conditions. Despite the prevalence of the disease, therefore, it is possible to guard against it by doing away with the conditions that favor its spread. Unhygienic conditions prepare animals for the development of tuberculosis in much the same manner as cultivation prepares a piece of land for the production of a crop. Nevertheless, even under such conditions, tuberculosis can not develop without the tubercle bacilli any more than a crop can be produced in a cultivated field without seed.

To prevent tuberculosis in live stock, therefore, the germs should be kept away by the precautions already outlined: First, prevent the introduction of infected animals into the herd or flock; and, secondly, the surroundings of live stock should be such that the animals are kept in sufficiently good condition to resist the chance attacks of the germ.

SUGAR CONSUMPTION INCREASING.

The people of the United States are apparently using more sugar than ever before, for the increase in consumption has been greater than the increase in population. According to figures in Bulletin 473, recently prepared by the Bureau of Crop Estimates of the United States Department of Agriculture, the total consumption of sugar in this country for the decade ending with the fiscal year 1912–13 was 42.9 per cent greater than the consumption for the preceding decade, while the population for the same period only shows an increase of 21 per cent.

NEW FARMERS' BULLETINS.

Canaries, Their Care and Management. No. 770.

The Use of a Diary for Farm Accounts. No. 782.

Contagious Abortion of Cattle. No. 790.

How the Federal Farm Loan Act Benefits the Farmer. No. 792.

Currant bushes are very bad neighbors for white-pine trees, as the currant bush may act as host for the fungus which causes white-pine blister rust. This disease can be spread by nursery stock of white pine, and those who wish to protect their pine trees should not plant currants near them.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., FEBRUARY 28, 1917. No. 30

FEED RANGE CATTLE.

Heavy Losses in Breeding Cows Will Occur on Ranges Unless Feeding Is Begun at Once.

The present winter has been a very severe one in many parts of the country, with the result that cattle, and especially range cattle, are getting much thinner than usual for this time of the year. In many parts of the South and West the cattle are required to make their living from the range and the old stalk fields. Quite a few farmers and ranchmen are reporting the loss of some cattle, especially young cattle and cows, from emaciation, or from starvation and exposure.

Many cows which are suckling calves or which will calve in the next two or three months are becoming weak from lack of nutritive feed and from exposure. These are valuable cattle, valuable not alone for themselves, but for the calf which each should raise this year. It is utter folly for these cows to be neglected for the short time until grass comes. Most of them can be saved at a small expense if they are given immediate attention and feed. Pregnant cows are not usually as strong as they look, and many of them become too weak to withstand the rigors of exposure, lack of feed, and calving during the month of March.

In the cotton region, grass should be good by April 1, and after that date practically all of the stock will get along all right. In all parts of the South, the pastures will be good before May 1. Feeding the thin cows and heifers for less than sixty days will cut down the losses to a minimum.

On the small farms where the cattle can easily be gotten up, they should be given some good roughage such as hay or silage, or be fed a combination of them or a ration of straw and hay or silage supplemented with a small amount of cottonseed meal or cake daily.

For cattle on the range in the West or South, a daily ration of 2 to 2½ pounds of cottonseed cake per head for the next 45 days will enable most of the cows to come through the winter in thrifty condition. In other words, 110 to 125 pounds of cottonseed cake, worth from $2.25 to $3, will save the loss of many thin cows which are worth from $25 to $60 per head.

There is no feed generally available throughout the South and Southwest which can take the place of cottonseed meal for wintering cattle. Many cattlemen think cottonseed meal has been too high in price to feed this winter, and consequently have reduced or eliminated it from the ration. This, combined with the severe winter, is responsible for most of the thin cattle. Cottonseed meal could be used profitably for wintering cattle if it cost $60 per ton this year, when the price of other feeds is considered. It is safe to estimate that 1 pound of cottonseed meal is worth 2 pounds of corn, and for wintering cattle it is frequently worth more. If corn is worth 70 cents a bushel, cottonseed meal is then worth $50 per ton; or if corn is worth $1 per bushel, cottonseed meal is worth $71.44 per ton for wintering stock cattle.

The thin cows should be rounded up immediately and put on better range and given some supplementary feeds, before heavy losses occur. The loss of one cow will frequently equal the cost of feeding almost a carload of cows for the short period until grass comes. In addition, the cows which are given feed from now until grass comes

(*Continued on page 4.*)

SPECIAL NOTICE REGARDING FEDERAL ROAD AID.

February 17, 1917.

The Secretary of Agriculture gave out a statement to-day to refute the report that States desiring to obtain money for roads under the Federal aid road act, which appropriates $85,000,000, must build only expensive roads, and to make it clear that no particular kind of material will be required or favored by the Department of Agriculture to the detriment of other materials.

"There is not the slightest truth in such a report," said Secretary Houston. "This department, which is charged with the administration of the Federal aid road act, has placed absolutely no restrictions, either direct or implied, upon the kinds of highways to be constructed. States may submit for approval any kind of road, even an earth road, and approval will be given if the construction be substantial in character, suitable for traffic needs, and meets the terms of the Federal act. To give State legislators and highway officials the impression that this department favors only costly types of road, or discriminates in favor of any particular material, results not only in spreading misinformation, but in placing barriers in the way of States which wish to avail themselves of Federal aid in road construction."

GOOSE RAISING.

Profitable in Small Numbers on Low, Rough Pasture Land with Natural Water Supply.

Pasturage is essential to the successful raising of geese, according to Farmers' Bulletin No. 767, recently issued by the United States Department of Agriculture.

The industry is at present on the basis of small flocks raised on general farms, few, if any, farms being devoted entirely to goose raising. In some producing sections, however, the fattening of geese is conducted as a special business. For this business the geese are collected from general farms, usually over a large area, and are fattened for several weeks before being killed.

Geese can be raised in small numbers successfully and at a profit, says the bulletin, on farms where there is low rough pasture land with a natural supply of water. Geese are generally quite free from disease and all insect pests, but occasionally are affected by the diseases common to poultry. Grass makes up the bulk of the feed for geese, and it is doubtful whether it pays to raise them unless good grass range is available. A body of water where they can swim is considered essential during the breeding season and is a good feature during the rest of the year. The market for geese is not so general as for chickens. This should be considered in undertaking the raising of geese. The demand and the price paid for geese are usually good in sections where goose fattening is conducted on a large scale. Many geese are kept in the South for the production of feathers rather than for their flesh, but the demand for their feathers is not so good as it has been, making the business less profitable. Wherever possible, the geese on a farm should have free range. Many farmers in the South keep them to kill the weeds in the cotton fields.

Houses.

Except in winter or during stormy weather when some protection should be provided, mature geese do not usually need a house. Some kind of shelter, such as a shed open on the south side, a poultry house, or a barn is usually provided by breeders in the North and is used by many in the South. Coops, barrels, or some other dry shelter should be provided for young goslings. The goose

houses should be kept clean and plenty of clean straw provided for the floor.

Selecting and Mating.

Geese, like other kinds of poultry, should be selected for size, prolificacy, and vitality. They should be mated several months prior to the breeding season to obtain the best results; therefore breeding stock should be bought in the fall. Goose matings are not changed from year to year unless the results are unsatisfactory. A gander may be mated with from one to four geese, but pair or trio matings usually give the best results. The wild gander usually mates with only one goose. When mated, geese are allowed to run in flocks. From 4 to 25 geese may be kept on an acre of land, and under most conditions 10 is a fair average.

Incubation.

Geese are fed a ration to produce eggs during the latter part of the winter or so that the goslings will be hatched by the time there is good grass pasture. They are allowed to make nests on the floor of the house, or large boxes, barrels, or shelters are provided for that purpose. The eggs should be collected daily and kept in a cool place where the contents will not evaporate too freely; if kept for some time they may be stored in loose bran. The first eggs are usually set under hens, while the last ones which the goose lays may be hatched either under hens or under the goose if she goes broody. If the eggs are not removed from the nest in which the goose is laying she will usually stop laying sooner than if they are taken away. Some breeders prefer to raise all the goslings under hens, as geese sometimes become difficult to manage when allowed to hatch and rear their young. Hens used for hatching goose eggs must be dusted with insect powder and have good attention, as, in the case of geese, the period of incubation is longer than in that of fowls. Goose eggs may be hatched in incubators and the goslings successfully raised in brooders, although this is not a common practice.

The period of incubation of goose eggs varies from 28 to 30 days. Moisture should be added to the eggs after the first week if set under hens or in incubators; this is usually done by sprinkling the eggs or the nest with warm water. Four to six eggs are set under a hen and 10 to 13 under a goose. They may be tested about the tenth day, and those which are infertile or contain dead germs should be removed. They hatch slowly, especially under hens, and the goslings are usually removed as soon as hatched and kept in a warm place until the process is over, when they are put back under the hen or goose. Some breeders who hatch with both geese and hens give all the goslings to the geese. Hens with goslings may be confined to the coop and the goslings allowed to range. The latter, especially if the weather is cold, are not usually allowed to go into water until they are several days old. In mild weather the hens are allowed to brood the goslings for from 7 to 10 days, when the latter are able to take care of themselves. Good-sized growing coops, with board floors, should be provided for the goslings, and they must be protected from their enemies, and given some attention when on range.

Feeding the Geese and Goslings.

Geese are generally raised where they have a good grass range or pasture, as they are good grazers and, except during the winter months, usually pick up most of their living. The pasture may be supplemented with light feeds of the common or home-grown grains or wet mash daily, the necessity and quantity of this feed depending on the pasture. Goslings do not need feed until they are 24 to 36 hours old, when they should be fed any of the mashes recommended for chickens or ducklings.

Preparation for Market.

Before marketing the young geese the average farmer can feed advantageously a fattening ration either while the geese are on grass range or confined to small yards, but it is doubtful whether it would pay him to confine them to individual or small pens and make a specialty of fattening unless he has a special market or retail trade for well-fattened stock.

Geese are usually killed and picked in the same manner as other kinds of poultry. Some markets prefer dry-picked geese, while in other markets no difference is made in the price of scalded or dry-picked geese. When feathers are to be saved fowls should not be scalded, but should be picked dry before or after steaming. On most farms where geese are raised the feathers are plucked from the live fowls at some time prior to molting. About $1\frac{1}{10}$ pounds per goose is the average yield of feathers. Feathers are worth from 30 cents to $1 a pound, and the picking cost per goose is about 11 cents.

Breeds.

Six breeds of geese have been admitted to the American Standard of Perfection, namely: Toulouse, Embden, Chinese, African, Wild or Canadian, and Egyptian. In addition to the standard breeds there is the so-called Mongrel goose, which is a hybrid made by crossing one of these varieties or the common goose with wild geese. Crosses of the varieties of geese, especially of the Toulouse and Embden, are occasionally made, but without any apparent gain. The Toulouse, Embden, Chinese, and African are easily the most popular breeds of geese in this country, the first two greatly leading the other breeds. All economic breeds of geese are kept primarily for the production of flesh and feathers, and although their eggs are occasionally used for culinary purposes on the farm there is no demand for them for food purposes in the markets.

The Toulouse, the largest of the standard breeds of geese, is a good layer, producing from 20 to 35 eggs a year, is docile, grows rapidly, and makes a good market bird. However, its dark pinfeathers make it a slightly less attractive market goose than the Embden.

The Embden, a large, white goose, slightly smaller and with somewhat longer legs than the Toulouse, is only a fair layer and is usually less prolific than the Toulouse. This breed has white pinfeathers, is a rapid grower, and matures early.

The African, a gray goose with a distinct brown shade, about the size of the Embden; is a good layer and makes a good market goose, although it has the objectionable dark pinfeathers. It is a rapid grower and matures early.

There are two standard varieties of Chinese geese, the brown and the white. Both varieties mature early and are said to be prolific layers and rapid growers, but shy and rather difficult to handle.

The wild goose is bred to some extent in captivity, and the young are sold to hunters to use as decoys. The wild gander is used to cross with either the common or the pure-bred goose, producing the so-called Mongrel goose. This Mongrel goose is highly prized as a market goose, but is sterile and can not be bred.

The Egyptian goose is a small, brightly colored goose kept for ornamental purposes and rarely seen in this country. It resembles the wild goose in shape and weighs 2 pounds less in each class.

The behavior of the Guatemalan varieties of avocado in California and the fruiting of two of the early introductions of this fruit from Guatemalan species which were secured two years ago has made the prospects of the cultivation of this important fruit plant in Florida seem sufficient to warrant the distribution by the department of grafted plants of the winter fruiting Guatemalan forms to experimenters engaged in this new fruit industry.

The acquisition through the gift of the municipality of Tokyo of budwood from the famous Arakawa collection of flowering cherry trees and their propagation on introduced Japanese cherry stocks has put the department in a position to give a wide trial in the near future to the hardiness of these superbly beautiful trees as dooryard and park trees.

By planting wild trees and shrubs bearing fruits about the home, the householder can attract birds and at the same time protect cultivated fruits from their ravages.

FEEDING DAIRY CALVES.

Early Weaning of Calves on Dairy Farms Necessitates Special Attention to Feeding Methods.

Feeding the calf should begin before it is born, says Farmers' Bulletin 777, Feeding and Management of Dairy Calves and Young Dairy Stock, recently issued by the United States Department of Agriculture. Poorly nourished cows give birth to weak, puny calves which are hard to raise. Cows which have an abundance of palatable and succulent feed and are in good body flesh and healthy, thrifty condition at calving time are more likely to produce well-developed, strong, and sturdy calves, which will respond normally to proper feed and care.

The calf should always receive its mother's milk at first, as the colostrum, or first milk, stimulates the calf's stomach and other digestive organs to action. Most dairymen prefer to keep the calf with the cow for about 48 hours immediately after birth. It may be best to allow a weak calf or one that does not gain strength readily to remain a longer time, but it is sometimes difficult to teach the calf to drink after sucking the cow for a time, and serious trouble may result from its failure to obtain food.

Successful raising of calves requires absolute cleanliness. Calf pens should always be kept clean and be supplied with plenty of dry bedding. Discarded feed should be removed from the feed boxes, which should be thoroughly brushed and cleaned each day. All milk fed should be fresh and clean, which is true also of other feeds. Milk pails should be scalded thoroughly with boiling water, or sterilized with steam if possible.

Milk from cows having a communicable disease, as tuberculosis, should be pasteurized (heated to 145° F. and held at that temperature for 30 minutes) before it is fed to calves. Separated milk from a creamery also should be pasteurized, because it is practically impossible to know that such milk is free from infection.

Better results are obtained by feeding young calves three times a day, with the periods between feeding as nearly equal as possible. When fed in this way the calf does not overload its stomach, and the digestion of the feed is more evenly distributed throughout the 24 hours. Regularity in feeding is important. When calves are fed but twice a day the feeding should be as nearly as possible 12 hours apart.

At birth a 50-pound calf should have about 8 pounds of whole milk a day, while a 100-pound one should have about 12 pounds. For the first four days milk from the dam should be fed, then that from any of the other cows in the herd, preferably not from any that are nearly dry. Milk containing not more than 4 per cent butter fat is considered best.

At the beginning of the third week either skim or separated milk may be substituted for whole milk at the rate of 1 pound a day. The daily ration may be increased from 2 to 4 pounds, depending upon the vigor of the calf. When the calf does not drink eagerly what is offered, the quantity should be cut down. The ration at the end of the third week usually should be approximately one-half whole and one-half separated milk. During the fourth week the change should be continued until by the end of the week only separated milk is fed, unless the calf is very delicate. With especially vigorous calves the change to separated milk can be made about a week earlier. The quantity fed can be increased gradually to 18 t 20 pounds a day.

Six months is probably a good average age at which to wean calves from milk. The age depends upon the cost of the milk in relation to the value of the calf, its breed, size, vigor, etc. The season of the year and the other feeds available also must be considered. When the best of hay, silage, and a good variety of grains are available, or when good, succulent pasturage can be provided, the calf can be weaned earlier; also the stronger and more vigorous the calf the earlier it can be weaned. On the other hand, the more valuable the calf the more expense the owner is warranted in developing it and the later it probably will be weaned. If skim or separated milk is plentiful, calves may be fed profitably until 8 or 10 months old.

When the calf is in its second week, it should begin to receive grain, and when one month old it should eat about half a pound a day. After this time the quantity of grain may be gradually increased, feeding all that the calf will eat until 3 pounds a day is reached, probably during the third month. Grain fed to supplement separated milk should never be mixed with the milk. It is questionable whether the preparation of grain in any way, such as soaking or boiling, is advisable under most circumstances.

Wheat bran is eaten readily by young calves. Corn has an excellent physiological effect and to a great extent may take the place of fat removed from skim or separated milk. Experiments tend to show that corn fed to calves should be cracked rather than finely ground. Ground oats are good in grain mixtures when available, but in many cases cost much more per unit of feed than corn and bran. The following grain mixtures are recommended in the bulletin:

(1) Three parts cracked corn and one part wheat bran.

(2) Three parts cracked corn, one part wheat bran, and one part ground oats.

(3) Three parts cracked corn, one part wheat bran, one part ground oats, and one part linseed meal.

(4) Five parts cracked corn, one part wheat bran, one part ground oats, and one part blood meal.

(5) Oats, ground.

Clover hay, alfalfa hay, or the most palatable roughage available should be given the calf after the second week. Alfalfa is liable to cause scours, and should be fed sparingly at first and increased only after the calf gets accustomed to it. At first, hay should be furnished only a handful at a time and be placed so that it can not be soiled. For the first six months, at least, the calf should receive all the roughage of good quality that it will eat up clean. When the calf has access to good pasture during the first six months, it need not receive other roughage. It is not advisable, however, to have the calf under two months of age on pasture in the early spring.

The percentage of alfalfa seed that will grow can be easily determined by means of a simple tester. The seed should be thoroughly mixed, after which 100 or 200 seeds should be counted out. The seeds should be placed between two pieces of blotting paper or two folds of a piece of flannel cloth, care being taken that the seeds do not touch one another. The seed container should then be put on a plate, well moistened without saturating, covered with another plate inverted, and the tester then placed where the temperature can be kept at about 70° F. After about three days the sprouted seed should be counted and removed each day until about the sixth, when most of the good seeds will have sprouted and the percentage that will grow can be determined. Some hard seed are occasionally present in a sample. These may be alive, but they require additional time for germination. In the case of Grimm alfalfa as much as 35 per cent of the seed is frequently hard.

ROTATION FOR POULTRY YARDS WHICH HAS PROVED PRACTICAL IN SOME LOCATIONS.

Date.	Yard A.	Yard B.
Mar. 1 to Apr. 30	Peas and oats	Feeding.
Apr. 30 to May 25	Feeding	Peas and barley.
May 25 to June 15	Dwarf Essex rape	Feeding.
June 15 to July 10	Feeding	Buckwheat and oats.
July 10 to Aug. 1	Buckwheat	Feeding.
Aug. 1 to Aug. 20	Feeding	Cowpeas and millet.
Aug. 20 to Sept. 20	Rye, vetch, clover	Feeding.
Sept. 20 to Dec. 1	Feeding	Rye and vetch.

COMMON CABBAGE WORM

Control Measures Perfected Which Greatly Reduce Losses Caused by This Destructive Insect.

The common cabbage worm, the most destructive insect enemy of cabbage and related crops in the United States, begins its depredations as soon as the young plants are set out in the spring. Steps to combat it should be taken at an equally early date, therefore, it is pointed out in Farmers' Bulletin 766 of the United States Department of Agriculture, The Common Cabbage Worm, by F. H. Chittenden.

Although the insect caused the total destruction of cabbage, cauliflower, and other crops in large areas in the years immediately after its first appearance in this country in the sixties, control measures have now been perfected to such a degree and adopted to such an extent that losses need not be great. Spraying with a solution of 2 pounds of powdered arsenate of lead, 4 pounds of arsenate of lead in the paste form, or 1 pound of Paris green to 50 gallons of water should be begun as soon as the plants are set out and should be repeated as often as examination of the plants shows it to be necessary.

The common cabbage "worm" is the larva of a white butterfly having black-tipped wings. The butterflies appear on warm spring days as early as March, even in the Northern States, and continue about gardens and fields until after several severe fall frosts. In the Gulf region they are present throughout the season. Eggs are laid on cabbage and related plants, where they hatch in from four to eight days.

The caterpillar is velvety green, about the color of the cabbage foliage. It eats voraciously and grows rapidly, becoming full grown in from 10 to 14 days after hatching. Three generations occur each season in the Northeast and probably six in the extreme South. The first generation usually develops on wild plants.

Hand picking may be practiced successfully in small gardens. Where sprays are employed they should be applied in a fine mist, since coarser applications tend to gather in drops on the leaves and run off.

Community action in combating the cabbage worm is desirable wherever cabbage and related crops are grown extensively. Agreements should be entered into by the truckers of the community for each to spray throughout the season and to clean carefully the fields of the bulk of the old stalks as soon as the crop is harvested. A few stalks should be left at regular intervals as traps on which the last generation of female butterflies will deposit eggs. Such stalks should be poisoned freely with arsenicals so that the worms of the last generation will not develop.

FEED RANGE CATTLE.

(*Continued from page 1.*)

will produce strong calves and give enough milk to produce a growthy calf, whereas many of the cows which are forced to subsist on range alone will produce small calves which will become stunted in early life.

Cooperative experiments being conducted by the Bureau of Animal Industry indicate that even though good feeds such as silage and hay are available for winter feeding to stock cattle, it is usually advisable and economical to use 1 pound of cottonseed meal per head per day with the ration. The cattle which are fed meal winter better and more economically because the meal replaces an amount of roughage which is worth more than the meal costs.

Demonstrations being conducted in some of the Southern States indicate that cattle, and especially calves, which are being fed 1 pound of cottonseed meal per day in addition to farm-grown roughage are wintering much more satisfactorily than those which are receiving the roughage alone.

On those farms where winter feed is available for the cows for the rest of the winter they should do well if fed one of the following rations:

	Pounds.
(1) Corn silage	25
Cottonseed meal	1
Oat straw or corn stover	5
(2) Corn stover or oat straw ad libitum.	
Cottonseed meal	2
(3) Silage	20
Clover, cowpea, or soy-bean hay	6

As soon as oat fields can be grazed the cattle will do well if grazed on the oats and fed 1 pound per head daily of cottonseed meal and given a little coarse roughage, like oat straw or corn stover. Cows which are in an emaciated condition need some concentrated feed, like cottonseed meal or ground corn, to give them strength. They are not able to utilize rough feeds as advantageously as cattle in ordinary flesh.

The farmer who has thin cattle at this time can not do any more important work than get them up immediately and begin feeding them sufficiently to avoid losses, and as soon as warm weather comes to dip them to kill lice and other parasites before putting them on pasture.

Ladybirds have proved, under normal conditions, to be almost complete checks on the ravages of the spinach aphis and other aphids which formerly were a serious menace to the cultivation of spinach, cabbage, and various other truck crops in southeastern Virginia.

When well established, alfalfa is able to get much of its nitrogen from the air, but it requires large amounts of phosphoric acid and potash. Most clay soils, however, seem to supply potash liberally, and heavy applications of potash salts have not been profitable except in certain limited areas. In general, a combination of muriate of potash 75 to 100 pounds, acid phosphate 350 to 500 pounds, and nitrate of soda 50 to 75 pounds per acre, gives the best results for this crop. While this combination has given quite satisfactory results, it is doubtful if either potash or nitrate of soda can be profitably used when unusually high prices for these materials prevail, and under such conditions an application of 350 to 500 pounds of acid phosphate can be used alone to very good advantage.

Good barnyard or stable manure is the most satisfactory fertilizer. The application of manure should be liberal. If barnyard or stable manure is not available and the soil has need of vegetable matter, some green-manure crop may be used to good advantage. Crimson clover, a mixture of rye and winter vetch, and cowpeas are good green-manure crops. Several weeks should elapse between plowing under a heavy green-manure crop and seeding.

CIVIL SERVICE EXAMINATIONS.

Scientific Preparator.

An open competitive examination for Scientific Preparator, for men between 20 and 35 years of age, will be held by the United States Civil Service Commission at numerous places throughout the country on March 7, 1917. The duties of this position will include the preparation of study material of birds and mammals in the field, the remodeling of such material in the laboratory, the labeling and cataloguing of specimens, and their care in collections. Competitors will be examined on North American birds and mammals, methods of field work, and laboratory methods. Experience also will be considered. To be eligible candidates must have graduated from a four years' high-school course, or must have had four full years of study in a school offering a course equivalent to that of a high school.

Game Inspector.

An open competitive examination for Inspector, Interstate Commerce in Game, for men between 25 and 45 years of age, will be held at numerous places throughout the United States on March 7, 1917. The duties of this position will be to investigate in the field cases of alleged shipment in interstate commerce of game killed or shipped in violation of local laws. Competitors will be examined on birds and mammals; State game laws; and interstate commerce in game, including methods of detecting and preventing illegal shipments of game under the Lacey Act. Education and experience also will be given consideration. To be eligible candidates must have had a good common-school education and at least one year's practical experience in the enforcement of game laws or active work in game protection.

Those desiring to take either of these examinations should apply at once to the United States Civil Service Commission for Form 1312, stating the title of the examination desired and the date on which it will be held.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., MARCH 7, 1917. No. 31

HATCH CHICKENS NOW.

Poultryman Makes His Greatest Profit from Birds Hatched Before the First of May.

The poultryman makes his greatest profit from the chickens which are hatched before May 1. The early hatched cockerels are sold as broilers when the broiler market is at its best. The flood of late hatched broilers brings prices down and congests the market. The greater returns received from early hatched broilers go far toward defraying the cost of raising the pullets. These pullets in turn begin laying when eggs are bringing the highest prices and when there is the greatest shortage of strictly fresh eggs.

Still more important, early hatched chickens grow more rapidly than those hatched late in the season and are much less likely to become sick. The late hatched chickens always are the first to catch cold and spread disease throughout the flock. Chickens hatched late in the year will not mature before cold weather and usually will not lay until well into the winter, or even toward spring. This means that they will have to be fed and carried over for several months at a constant expense, with no return, and this at a time when feed is at its highest.

The early hatched pullets can be developed to a large extent on range, and a saving in grain feed is possible in this way.

The highest producing pullets are those which begin laying early. To get into the 200-egg class a pullet must lay 60 or more eggs before March 1. In order to do this, pullets must be hatched before May 1, so that they will begin laying by the 1st of November. In the section of the country north of the Ohio River it is advisable to begin hatching not later than March 1 and to continue hatching at intervals through March and April, so that pullets of different ages will be coming on, and the broilers will not all be ready for market at the same time.

The American breeds (Plymouth Rocks, Wyandottes, Rhode Island Reds, etc.) should be hatched earlier than the Mediterranean breeds, such as the Leghorns, Minorcas, etc., because they take about one month longer to mature. Pullets of the American breeds will begin laying at about 7 months of age, and those of the Mediterranean breeds at about 6 months.

It is often difficult to get enough broody hens to set the eggs early. This may be partly overcome by setting the earliest eggs in an incubator and putting those eggs under hens a few days before they are ready to hatch. A hen usually can brood from one and one-half to two times as many chickens as she will hatch, so that additional chickens hatched in the incubators can also be given to hens which are hatching eggs at the same time.

Early hatching will produce more eggs in the fall and winter, while a larger proportion of hens will get broody early in the spring, thus completing the necessary circle for early fall egg production.

Early hatched chickens are by far the most profitable in every way.

RESEEDING WINTERKILLED OATS.

The extreme cold weather in the Southern States during the first two weeks in February caused much winterkilling of fall-sown oats. The yield from fall-sown oats is so much better than from spring-sown oats, however, that it will not be profitable to resow to spring oats unless much more than half the fall-sown oats were winterkilled, according to the United States Department of Agriculture. It is best to delay reseeding a few days until it can be determined definitely whether or not there is a sufficient stand to justify leaving the crop to mature. Fields where it is certain that this crop was destroyed by cold may now be sown to spring oats with fair prospects for profitable yields if the seeding is done in early March. Only the most fertile land should be sown to oats in the spring, as this crop will not yield well from spring seeding on poor land.

The best varieties to sow at this time are Burt, Fulghum, Red Rustproof, and Appler. The land should not be plowed, but the surface should be loosened by disking or through harrowing and the seed drilled in. If a grain drill is not available the seed may be sown broadest and covered by disking and harrowing. The best rate of seeding is about 3 bushels of good seed to the acre.

The U. S. Weather Bureau during the crop seasons furnishes special weather warning services and information to growers of corn, wheat, rice, sugar, tobacco, alfalfa, apples, pears, peaches, grapes, and cranberries. The frost warnings also are of great value to growers of truck and other delicate crops.

THE FOOD SITUATION.

Secretary of Agriculture Says There Is Nothing to Justify Hysterical Thinking or Action.

The Secretary of Agriculture, D. F. Houston, to-day, March 3, issued the following statement:

There is nothing in the food situation of the country which justifies hysterical thinking or action. This is not a time for hysteria. Nor is this a time for the thought of the American people to be directed or dominated by those who have the interests of another country primarily at heart or any selfish interest to further.

The prices of foodstuffs are high. A full and satisfactory explanation of prevailing prices is not possible on the basis of existing knowledge. It is only recently that agencies have been created in the country to study food distribution, and we have not all the necessary facts to enable us to arrive at the truth. Where the food supply is located, who owns it, what may be the difficulties of securing it, whether the local market conditions are due to car shortage, whether there is artificial manipulation or control, no one can state with certainty. It is essential that we have the facts not only because of the light they might throw on present conditions but also because they are prerequisite for the working out of a permanent, just, and economical system of marketing. Therefore the investigation directed by the President ought to be made promptly, and Congress ought to give the Federal Trade Commission and the Department of Agriculture the necessary funds. Certainly such an investigation can not furnish immediate relief, but it would be absurd to oppose it for this reason. It does not stand in the way of any other measures that may be wise. It does not prevent any constructive action on the part of any municipal or local agencies. We must have the facts and the sooner the investigation is undertaken the better. It is highly probable that as a result of it large permanent improvements may be made.

Importance of Food Conservation.

For partial immediate relief, every individual and community should consider earnestly the matter of food conservation and the limitation of waste. As a Nation we seem to have a disdain of economizing. In

many homes there is a strong feeling that it is "only decent" to provide more food than will be eaten and that it is demeaning to reckon closely. The experts of the Department of Agriculture report to me that the dietary studies made by them point to an annual food waste of about $700,000,000. Of course, the waste in families of very limited means is slight, but in the families of moderate and ample means the waste is considerable. Even if the estimate were reduced by half the waste would still be enormous.

The food waste in the household, the experts assert, results in large measure from bad preparation and bad cooking, from improper care and handling, and, in well-to-do families, from serving an undue number of courses and an overabundant supply and failing to save and utilize the food not consumed. As an instance of improper handling, it is discovered that in the preparation of potatoes 20 per cent of the edible portion in many cases is discarded.

The Position of the Farmer.

I am informed that the belligerents in Europe in dealing with their food situation have, up to this time, accomplished their purposes more largely through conservation of foods, regulation of the diet, limitation of courses and quantities, and prevention of waste, rather than through direct control of production or regulation of distribution under any sort of dictatorship. Only recently has England indicated her intention to deal directly with production, and in doing so has recognized it as essential that she guarantee to farmers a reasonable minimum price over a period of years. Obviously, if farmers are to be induced to increase acreage, a guaranty of a reasonable price by the Nation or the community seems necessary. Farmers are governed by the same thinking and motives as other people. They are patriotic; but it is unlikely that they will undertake greatly to increase their output unless they are reasonably sure that it will be profitable for them to do so. One could no more expect a farmer greatly to increase his product without a knowledge of the outcome than he could expect a manufacturer to double the production of shoes unless he knew that he could dispose of them profitably. Those who are urging that farmers be induced greatly to increase their acreage beyond that which their own judgment dictates know very little about the psychology of farmers, or of other people for that matter, or about the fundamental necessities of the situation. As a matter of fact, farmers are going to do their own thinking in this matter and will not follow anybody's dictation. They are quite alert to the interplay of supply and demand, and respond quite as quickly as other people to the stimulus of high prices. Before touching upon this particular point further, a word should be said about the estimated food supply of the country for the current year.

Estimated Food Supply for Current Year.

The weather conditions during the growing season of 1916 were unfavorable in many parts of the world. They were distinctly unfavorable in this country. Although there was a large wheat acreage, the weather conditions were such as to favor the appearance of the black-rust disease affecting wheat. The consequence was that although the acreage was large the yield was relatively small. The conditions were not especially favorable for corn and for some other important crops. Still the food output on the whole for the current year was not so small as to excite alarm. The corn crop was 2,600,000,000 bushels, nearly the five-year average. The oat crop was above the five-year average, the barley very nearly the five-year average, rye 10,000,000 bushels more than the five-year average, and rice 40,000,000 bushels, as against 29,000,000 bushels the year before, and 24,500,000 bushels, the five-year average. The production of kafir corn, a relatively new crop, was 50,000,000 bushels. The production of peaches, 37,000,000 bushels, of pears 10,400,000 bushels, and of apples 67,500,000 barrels, represents approximately the five-year average, while the estimated production of oranges was 23,800,000 boxes, or 2,600,000 more than that of the preceding year. The crop of sugar beets was one of the largest ever produced. Meat products likewise were produced in larger quantities, the estimated amount for the year being 22,378-000,000 pounds, as against a five-year average of 19,712,000,000 pounds, or 2,000,000,000 pounds greater than the output for the year 1915. Dairy and poultry products on the whole showed a gain, as indicated in the accompanying table.

Wheat.

The two food products which reveal a marked decrease were wheat and Irish potatoes. It is evident that the public has failed to look at all the facts involved, especially in the case of wheat. The wheat crop for the current year was reported to be 640,000,000 bushels as against a five-year average of 728,000,000 bushels and the record crop of 1915 of 1,026,000,000 bushels. Apparently the public has compared the crop of 1916 solely with the record crop of 1915 and failed to take into account the unusually large carry over from that year into the present year of 164,000,000 bushels or more. Furthermore its attention has been fixed on the large exports of the two years immediately following the outbreak of the war. The exports of wheat in normal times are approximately 105,000,000 bushels. The year preceding the war it was 145,000,000 bushels. In 1914–15 it was 332,000,000 bushels, dropping in 1915–16 to 243,000,000 bushels. Looking only at the crop of 640,000,000 bushels and having in mind the possibilities of export as suggested by the figure of 332,000,000 for 1914–15, the public naturally apprehended that there would be a lack of bread. Dealers and others became unduly excited. The total available supply, including both the crop and the carry over, aggregating 804,000,000 bushels—part of which, it should be said, was not suitable for milling purposes—should have been considered as well as the relatively small exports for the first six months of the current year. Up to the 1st of January the exports were only 97,000,000 bushels, and they have tended to decrease partly on account of the disturbed shipping conditions since the 1st of January. Our normal domestic needs of wheat for human food, for seeding purposes, and for a reserve to carry over into the next year require 640,000,000 bushels. As I have stated, the total year's supply is 804,000,000 bushels. This would give us an available exportable surplus of 164,000,000 bushels. At the rate of export since the 1st of July, with the tendency to decline recently, we should have enough wheat in the country very nearly to supply normal needs.

Gain in dairy products.

	1916	1915	1914	Average 1910–1914.
Milk produced ..... gallons..	7,959,656,000	7,696,844,000	7,506,794,000	7,569,926,000
Milk sold ..... do....	2,061,551,000	1,993,482,000	1,944,260,000	1,969,611,000
Butter ..... pounds..	1,059,771,000	1,024,780,000	999,476,000	1,007,882,000
Cheese ..... do....	12,246,000	11,841,000	11,549,000	11,645,000
Butter fat sold ..... do....	326,346,000	315,571,000	307,778,000	310,367,000
Cream sold ..... gallons..	57,888,000	55,977,000	54,595,000	55,054,000

Increase in poultry products.

	1916	1915	1914	Average 1910–1914.
Eggs ..... dozen..	1,847,512,000	1,810,912,000	1,774,312,000	1,701,789,000
Fowls raised ..... number..	566,722,000	555,494,000	544,267,000	522,021,000

Crop Prospects.

I am not a prophet and can not furnish any guaranty for the future. There are certain things, however, I do know. The farmers, governed as they are by ordinary motives, in response to the present level of prices, have in certain directions shown a definite purpose to increase their acreage. Winter wheat was sown in the fall. The reports reveal that the total acreage was 40,090,000. This is nearly 900,000 more than the amount planted the preceding fall. Much of the latter, however, was winter-killed, so that the planting this fall was 5,260,000 acres more than harvested last summer. Spring wheat has not been planted. In 1915 the acreage was 19,445,000 acres. The average acreage for five years is 18,800,000. It would be singular if this did not increase. But taking the average for five years and adding it to the winter wheat acreage, we have approximately 59,000,000 acres, or practically the same as the record acreage of 1915. What the yield per acre may be will depend largely on the weather conditions. The average of the six lowest yields per acre since 1894 was 12.5 bushels. This would give us 737,000,000 bushels of wheat. The average yield for five years down to the record crop year of 1915 was 14.9 bushels. This would give us 879,000,000 bushels of wheat. The average for five years, including the record crop year, was 15.5 bushels. This would give us 914,000,000 bushels. A yield equal to that of 1914 of 16.6 bushels would give us 979,000,000 bushels, while a yield equal to that of the record crop year would give us 1,000,000,000 bushels.

The Situation in the South.

The Department of Agriculture has done all it could prudently do to call attention to the desirability of adjusting the supply of different sorts of agricultural commodities to the demand. As I have said, farmers are doing their own thinking and will not submit to anybody's dictation. In the South, in particular, the department has waged a persistent campaign for some years to bring about a better agriculture, to stimulate the local production of an ampler supply of foodstuffs.

The South has heretofore been too dependent on corn and cotton. It has put too many of its eggs in one basket. Although it is largely agricultural, it has imported in the neighborhood of six or seven hundred million dollars' worth of foodstuffs from the West. It is clearly good economy for the South to supply her own foodstuffs and feedstuffs and it is certainly a safer practice for her to do so. The department, the agricultural colleges, and many other agencies, through the daily press, the agricultural journals, the bankers and business men, farmers' associations, bulletins and circulars, and the farm demonstration machinery reaching into many parts of the South, have urged the necessity of a better balanced agriculture and the wisdom of largely increasing foodstuffs. There has been a tendency over several years for the South to practice this agriculture and following the low price of cotton in 1914 the acreage in foodstuffs considerably increased. It remains to be seen how far the recent high price of cotton will check this tendency. It would be unfortunate if it did so.

The Meat Supply.

A further word should be said about the tendency of the meat supply to increase. While following the outbreak of the war there was a considerable increase in exports of meats, amounting in 1916 to 1,500,000,000 pounds, the domestic production in 1916 was 3,000,000,000 pounds greater than in 1914, and the tendency is still upward. Figures recently submitted show that the number of cattle on January 1, 1917, was 1,037,000 greater than on January 1, 1916, and that the milk cows had increased in the same period 660,000. A very considerable development in live stock is taking place in the South.

No Federal Dictatorship Needed.

The department and all the agricultural agencies in the country are giving definite and careful attention to these problems. The Federal Government through several of its departments is giving continuous consideration to the immediate problems presented and to the possibility of remedial measures. The solution will certainly not involve a Federal dictatorship, and it is highly unlikely that it will involve a dictatorship in any State or community. America does not take kindly to dictators. The difficulties, in any event, would be very nearly insuperable. We have a continent to deal with and there are difficulties of double jurisdiction. Consider, for instance, the matter of fixing a minimum price. The Federal Government could deal only with commodities passing into interstate commerce. The States might be hampered in attempting to fix prices.

As I stated at the outset, there is no occasion for hysteria. Intelligent planning and constructive action, in conjunction with the operation of normal forces, are what we need and these only can bring about a satisfactory result.

Irish potatoes and most other vegetables and fruits tend to make the body tissues and fluids alkaline, so correcting the tendency of meat, eggs, fish, and similar foods to create acid conditions. Since the body performs its work best when it is neutral or slightly alkaline, this function of fruits and vegetables is important, especially to the hearty meat eater.

ASPARAGUS AND RUST.

New Resistant Variety to Be Distributed for Trial—Details Essential to Success with This Crop.

Small quantities of the stock of a type of asparagus that is so resistant to rust that it is practically free from injury even when exposed to severe infection are now available for distribution by the United States Department of Agriculture to growers for trial only. This type has been developed by the department in cooperation with the Massachusetts Experiment Station. Growers who desire to avail themselves of the opportunity to try it are asked to take the matter up with their county agent or State agricultural college, with whom the department desires to cooperate to secure a fair test between it and some standard variety, such as Reading Giant, Argenteuil, or Palmetto.

In the present distribution preference will be given to those sections in which rust is a serious problem, but the new strains have been tested for other qualities than rust resistance, and it is believed that in yield, type, and quality they are superior to stocks now in common use in regions where rust is of minor importance.

The use of rust-resistant strains has already done much to lessen the loss from asparagus rust. Certain sections are now largely free from the disease, because the susceptible types have been eliminated from the fields and replaced by others of a more resistant character, such as the Argenteuil or Palmetto varieties. These strains do not suffer greatly from rust unless they are near fields of the old susceptible kinds. Under such circumstances, however, even the resistant types now in common use are liable to severe attacks. This danger, it is believed, does not exist in the latest type developed by the department.

The seed now available for distribution is from carefully selected, pedigreed plants from the best rust-resistant parent plants found in the course of the breeding experiments which have been carried on since 1906. All this stock is descended from one male plant crossed on various plants. This male plant has been named "Washington," and all the strains developed from it bear this name, with the addition of some qualifying term to indicate their history. No inferior strains are represented, but the wide range of variability in asparagus inevitably causes the appearance of a certain percentage of undesirable plants among the seedlings. Selection of the best seedling roots before planting in the permanent bed is, therefore, essential. This, however, is true of any strain or variety of asparagus. Long experience has shown that rigid selection is the most important factor in securing a good bed.

The work of selection is best done with one-year-old roots. If the seed was not planted too thick these will show by their size their future value as producers. In making selections for planting, therefore, only the largest roots should be saved. Crowns having the fewest bud clusters are most desirable, because, other things being equal, they will produce a few large stalks instead of many small ones. No more than half the number of roots grown should ever be put in the permanent bed and it is better to have so many seedlings that only 1 out of 10 need be retained. Experience has proved that a selection as rigid as this will pay for itself the first year the bed is cut. It must be remembered that once the bed is planted it is difficult to do any satisfactory replanting and losses due to poor plants and failures must be carried for the life of the bed. Areas of unselected stock have been studied in which not 1 plant in 10 is paying dividends. In New England a yield of 2 ounces per square foot for the season is generally regarded as satisfactory and yet good asparagus land there can be made to yield more than 4 ounces. The difference is due to poor plants and vacant spaces caused by lack of selection at planting time.

Care in selection is, however, by no means the only requisite for success in asparagus growing. No asparagus bed should be planted, say the specialists, unless the grower is in a position to take proper care of it. This care should begin at least two years before the bed is planted. A field full of quack grass, for example, is not suited to the growth of young asparagus plants, nor will poor and good land yield the same results, although not a few good farmers appear to expect them to.

Seed should be planted as early as possible in rich, sandy soil. For hand cultivation, rows 18 inches apart are sufficient; for the horse cultivation employed in the South, the distance should be from 2½ to 3 feet. Seed 1 to 2 inches apart and 1 inch deep give good results. Clean cultivation and careful attention to insect pests are necessary. The young plants respond to nitrogenous fertilizer, which should not be applied, however, in concentrated form too close to the row. Chlorin in the form of common salt or muriate of potash furnishes an apparent stimulus to growth that is well known to many growers. For a time salt was superseded to a great extent by muriate of potash, but now that the latter is hard to obtain, the use of salt is becoming more general again.

In the northern States the seed bed should be protected in winter with a mulch of straw or similar material to prevent injury from repeated freezing and thawing. Only well-grown, one-year old roots should be set out in the permanent bed. There is no advantage in the use of older stock and almost without exception experienced growers confine themselves to yearling roots. As has been explained already, these must be selected with the greatest care. They should be plowed out before they begin to grow in the early spring and stored in a cold place until they can be sorted. Without attention to these and similar details good results can not be expected.

As for the not uncommon notion that male plants are superior for planting purposes to the female, the specialists of the department find that this assertion is quite unwarranted. On the contrary, in their work the female plants have shown throughout a higher average in rust resistance, yield, vigor, size, and type.

Rust resistance, however, is not so much a question of the choice of male or female plants as it is a matter calling for community action. Although the department believes that the new type of asparagus it is now offering for trial is more resistant than any other, there are well-established varieties which will not suffer greatly if all the fields of the old rusty kinds are plowed out in the vicinity. Once this is done it is safe to say that rust ceases to be a factor in the yield of asparagus.

JESSE B. NORTON,
Physiologist.

MARKET REPORTS FOR MEAT.

Telegraphic Summary of Conditions Made by Department of Agriculture Now Available.

A new market news service on meats was begun Monday, February 19, when the United States Department of Agriculture released for public use telegraphic reports of conditions in three representative eastern meat-consuming centers. These reports will now be available daily to the trade and to consumers in New York, Boston, Philadelphia, Chicago, Kansas City, and Omaha. They are intended to place at the disposal of the meat producer and of the wholesale and retail trade useful information in regard to supplies on hand, the demand for the various kinds and grades of meat, and other factors influencing the trade.

This information has been collected experimentally for some time in order to test thoroughly the system before putting it into practical operation. In New York, Boston, and Philadelphia, where the conditions are representative of those in other large consuming centers, Government agents obtain early each morning all available information and send it by wire to Washington and to the eastern and western local offices of the Office of Markets and Rural Organization. There it is placed early in the business day at the disposal of all interested persons. Arrangements have been made for the publication of these reports in the trade newspapers, but individuals or groups of individuals can also obtain them upon application to the nearest local office of the department. No charge is made for messenger or mail deliveries, but when the reports are forwarded by wire the telegraph tolls must be paid by the recipients.

Although the details of operation are different in many respects, the general purpose and plan of this new service are similar to those of the news service for perishable crops, such as strawberries and cantaloupes, which is now in successful operation. Fuller information in regard to market conditions is believed to be an effective method of stabilizing the live stock and meat prices.

An important feature of the new service is the information it furnishes in regard to market conditions for kosher-killed meat. The kosher market requires large, heavy animals, and its influence upon prices for fall classes of stock is appreciable.

In addition to this daily service, the Office of Markets and Rural Organization now issues a monthly report of the quantities of meat and meat products in storage and will issue a weekly summary of the prices in the larger markets in greater detail than is possible in the daily telegrams.

SPRING SHOOTING PROHIBITED.

The United States Department of Agriculture has received inquiries from many sportsmen in the Middle West in regard to spring shooting of waterfowl. In response the department has made the following public announcement:

Under the Federal regulations there is a closed season from February 1 to September 6, inclusive, each year throughout the United States on waterfowl and other migratory game birds. The season for hunting is further restricted in various parts of the country to periods not exceeding three and one-half months. The open season on waterfowl in the States of Ohio, Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri is from September 16 to December 31, inclusive, and it is unlawful to hunt or kill waterfowl in those States at any other time. Persons committing violations of the regulations may be prosecuted at any time within three years after an offense is committed.

Oil of the soy bean is a palatable food widely eaten by the Chinese. This vegetable oil also is used in making paints, varnishes, soaps, rubber substitutes, linoleum, waterproof goods, lubricants, and printing ink.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., MARCH 14, 1917. No. 32

HATCH EARLY FOR SIZE.

Early-Hatched Chicks Have Advantage of More Favorable Growing Season Than Late-Hatched.

Contrary to general belief and practice, chicks do not grow or thrive as well during the warm months or hot summer days as they do earlier in the spring. Experienced poultrymen realize this fact. The average farmer, however, does not make an effort to hatch early so that the chicks will have the advantage of a longer and more favorable growing season. Early hatching not only insures more rapid gains in the growth of chicks but has a favorable influence on the size of the individuals of the flock. Late-hatched chicks rarely, if ever, attain the size of those hatched early. Early hatching likewise influences early maturity and consequently early egg production.

Given the same food, care, and attention, chicks hatched the 1st of March will weigh more when they are four months old than those hatched a month later, say the poultry specialists of the United States Department of Agriculture. This likewise holds true with chicks hatched the 1st of April as compared with those hatched May 1. This is due to the fact that the rate of growth of a chick is greater during the first four weeks of its life than at any other time. Consequently, the early-hatched chick, having the advantage of a more favorable growing season, makes greater gains during the first four weeks of its life than the late-hatched chick. During the early spring months when the temperature is not so varied the growth of chicks is more uniform and constant than it is during the summer.

Millions of chicks die every year as a result of being infested with lice which, under average farm conditions, are ofttimes difficult to control. Hen-hatched chicks are not as subject to lice in the early spring as they are during the warmer months when lice are more prevalent. If for no other reason, chicks should be hatched early so their growth will not be interrupted by the presence of lice.

Many farmers realize considerable money each spring from the sale of broilers, the price of which is usually governed by their size when sold and the time marketed. Thus it would seem that in order to increase the amount of money from the sale of broilers and fryers early hatching would be employed so as to have a marketable-sized fowl early in the spring when prices are highest.

HOW TO SET A HEN.

As the time approaches for the hen to become broody or sit, if care is taken to look into the nest, it will be seen that there are a few soft, downy feathers being left there by the hen; also the hen stays longer on the nest when laying at this time, and on being approached will quite likely remain on the nest, making a clucking noise, ruffling her feathers, and pecking at the intruder. When it is noted that a hen sits on the nest from two to three nights in succession, and that most of the feathers are gone from her breast, which should feel hot to the hand, she is ready to be transferred to a nest which has been prepared for her beforehand, according to the poultry specialists of the United States Department of Agriculture. The normal temperature of a hen is from 106° to 107° F., which varies slightly during incubation.

Dust the hen thoroughly with insect powder, and in applying the powder hold the hen by the feet, the head down, working the powder well into the feathers, giving special attention to regions around the vent and under the wings. The powder should also be sprinkled in the nest.

The nest should be in some quiet, out-of-the-way place, where the sitting hen will not be disturbed. Move her from the regular laying nest at night and handle her carefully in doing so. Put a china egg or two in the nest where she is to sit, and place a board over the opening so that she can not get off. Toward the evening of the second day quietly go in where she is sitting, leave some feed and water, remove the board from the front or top of the nest, and let the hen come off when she is ready. Should she return to the nest after feeding, remove the china egg or eggs and put under those that are to be incubated. If the nests are slightly darkened the hens are less likely to become restless. At hatching time they should be confined and not be disturbed until the hatch is completed, unless they become restless, when it may be best to remove the chicks that are hatched first. In cool weather it is best not to put more than 10 eggs under a hen, while later in the spring one can put 12 or 15, according to the size of the hen.

PROFITABLE PRODUCTION

How the Government Is Meeting the Farmer Half Way in the Fight for Economic Improvement.

A review of the most significant steps that have been taken in the last few years to benefit the economic condition of the farmer is contained in an article by Carl Vrooman, Assistant Secretary of Agriculture, published in the forthcoming Yearbook of the Department. In this article Mr. Vrooman points out that for 50 years the United States Department of Agriculture has been studying how to increase production on the farms, but that it is only very recently that stress has been laid on a study of the problem of making that production profitable. In the past, he says, there has been a mistaken theory that everybody is interested in increasing agricultural production, but that nobody but the farmer is interested in making that production profitable.

That this theory has at last been recognized as fallacious is indicated by important legislation enacted in the last few years. Prominent in this legislation was the creation, in 1913, of the Office of Markets and Rural Organization. The creation of this office, says Mr. Vrooman, "was an innovation of epoch-making significance." This office represents the first attempt on the part of the Government to remedy through scientific investigation the waste and extravagance in our present methods of distributing and disposing of farm products. Long before there was any official recognition of the need for this step, the farmers themselves realized the necessity for it. The Grange movement, the Farmers' Alliance movement, and the Populist movement were all inspired by the conviction on the part of the producers that organization on their part was essential to improvement in their economic condition. The Assistant Secretary points out that while many of the specific remedies demanded by the leaders of these movements were impracticable, their basic demands were just, and he emphasizes the necessity of applying to these problems much the same methods of scientific study which have made possible such extraordinary advances in the production of crops.

In addition to the creation of the Office of Markets and Rural Organization, a number of laws have been passed which are

characterized as being of immense economic importance to the farmer. Perhaps the most important one of these is "that financial magna charta of the farmer," the farm loan act. "This," declares the assistant secretary, "is the first great financial measure ever passed by Congress primarily in the interest of the farmer. I have no doubt that in the future it will be strengthened by amendments with regard to some of its minor details, as was the Federal reserve bill, but in all fairness it must be admitted that this bill will do for the farmer very much what the Federal reserve act is doing for the business man. It will furnish the farmer with those fundamental necessities that he has been asking for, voting for, and praying for, during the past half century."

These fundamental necessities are defined as:

First. Available capital in sufficient quantities for the farmer's legitimate needs.

Second. Loans on longer time and easier terms of payment.

Third. Lower rates of interest.

Another measure cited in this connection is the bonded warehouse act of August 11, 1916. This legislation was passed in response to a demand on the part of the farmers for a mechanism that would enable them to borrow money more easily, and at a lower rate of interest, on stored crops. It permits a farmer to place produce in a bonded warehouse and secure a receipt for it. On this receipt he can easily borrow money, for it represents gilt-edged security. The risk which in the old days the banker took in lending money, even to farmers with good credit, is eliminated by this method and the rates of interest therefore lowered. In addition, the farmer now has a much larger field in which to negotiate his loans than in the days when he was practically limited to those bankers who knew him personally.

The cotton futures act and the United States grain standards act are cited as further examples of recent progressive agrarian legislation. "The latter of these," Mr. Vrooman says, "is a step in the direction of national efficiency and national economic preparedness." Its effect will be markedly beneficial on our foreign commerce in grain. Of the cotton futures act it is said that the net result already has been that the prices of cotton, which are now published every day throughout the country reflect the actual changes in the value of cotton rather than quotations of arbitrary fluctuations created by gamblers for their own benefit, as was too often the case in the past.

In summing up the effect of these and other laws, Mr. Vrooman says: "It is clear, I think, that as a result of this splendid program of constructive legislation, a new agricultural epoch has begun. At last what for so long was merely the hope, the aspiration, the dream of the widely scattered, imperfectly organized tillers of our soil has become the avowed policy of the Federal Department of Agriculture, and has been written by Congress into the law of the land."

In conclusion the Assistant Secretary says: "There is indeed still need for organized effort on the part of farmers, still need for educational campaigns in behalf of measures to meet those requirements of the farmer which still remain unsatisfied. But it is a great thing that the Government of the nation that leads the world in agricultural production at last is meeting the farmer at least half way and has manifested a willingness and a friendly desire to cooperate with him in the future in any constructive work that looks to the building up of our national prosperity on the basis of a permanently prosperous agriculture."

SUGAR-BEET THRIPS.

Greenhouse Pest Which Attacks Sugar-Beet—Controlled by Spraying.

The sugar-beet thrips is an imported insect recognized as a greenhouse pest and also injuring outdoor plants, principally sugar beets and sugar cane, according to a recent professional paper of the United States Department of Agriculture, by William H. White, Bureau of Entomology. The insect is dark brown or black in color, and about 1.3 millimeters in length. The injury caused is similar to that of other species, such as the onion thrips and bean thrips. The plant is attacked by the adults and by the nymphs, or young, in the same manner. The leaf cells are pierced, and the plant juices withdrawn, causing the cells to shrivel and turn white. When a number of these cells are destroyed they appear as irregular white or light-brown spots. If the attack is severe, the whole leaf surface becomes invested by these spots and finally shrivels and dies.

Spraying has been found to be the most effective means of controlling this insect, both in the greenhouse and out of doors. The following solution used in one experiment killed all adult insects and about 95 per cent of the nymphs:

Nicotin sulphate	ounces..	6
Fish-oil soap	pounds..	4
Water	gallons..	50

The spray should be applied to both sides of the leaves; if possible, on a dull or cloudy day. The adults are not so active at this time and are, therefore, less likely to move out of reach of the spray.

In the greenhouse the sugar-beet thrips may be held in check by the application of a strong spray of water to the foliage. This washes the younger stages from the leaf; and as these are unable to reach the food plant again, they soon die.

COOPERATIVE CANNING.

Success Depends Upon Adequate Supply of Fresh, High-Grade Products Through a Long Season.

That a cooperative cannery is unlikely to succeed unless it can handle a sufficient quantity of high-grade fruit or vegetable products is pointed out in an article by W. H. Kerr in the 1916 Yearbook of the United States Department of Agriculture. Many canneries, it is said, have failed because their primary purpose was to dispose of culls and low-grade products, the portion of the crop that could not be sold on the market in a fresh state. Such low-grade products naturally bring low prices. The profit in them is not great, and they are difficult to dispose of at all except in connection with large quantities of high grades.

The first step, therefore, in the establishment of a cooperative canning business should be to make certain that the requisite supply of fresh fruit or vegetables can be obtained. A cannery should be operated as continuously throughout the year as possible in order to avoid the expense of idle machinery and idle help. The most successful cooperative establishments now pack a wide variety of products over a long period, some starting with strawberries in May and continuing steadily throughout the year until they close the season with the packing of late vegetables in December. If less than 300,000 pounds of raw material are handled annually, says the article, it is not likely that the proceeds will permit a fair return to the producers.

Lack of sufficient capital is another cause of the failure of many cooperative canneries. Such an enterprise requires more capital than the average cooperative undertaking. Considerable money is required to meet operating expenses and the returns from canned goods are frequently not received until as long as 18 months or more after the delivery of the raw material. This means that money must be advanced to the grower when he delivers the raw material, advances of this character frequently ranging from 35 to 65 per cent of the value of the produce. The money required for the purpose may frequently be secured from banks, if the plant and equipment are free from debt when operations are begun. If this is not the case, however, the banks may be unwilling to advance much money. As an instance of what is possible with good credit the article mentions a farmers' cannery in the West which recently purchased a trainload of sugar for use throughout the year and secured $85,000 from one bank for that purpose.

A third consideration of importance is continuity in the business. A sufficient volume of business must be secured not only for

one year but for succeeding years, and the contract with the producers, therefore, should be made to run for a considerable period of time. It is also desirable that the products and the varieties should be distinctly specified. Some of the more successful cooperative canneries have depended primarily upon a few big growers whose interest in the undertaking was sufficiently great to insure their support.

Wherever the business is large enough it is desirable to have a field man to work with the farmer members. An important portion of this man's time should be devoted to making certain that the proper varieties are grown. Market demands change from time to time, and it is essential for success that the cannery be able to supply the kind of products that are most asked for. One safe rule is to put up as high-grade products as possible, and farmers' canneries always should strive to increase the production of the best grades. These usually bring far better average returns to the producer than cheaper material.

CHOOSING BREEDS OF SWINE.

Whichever One the Farmer Selects He Should Develop to Its Highest Possible Standard.

To assist hog raisers and prospective hog raisers in determining the best breed of hogs to keep the United States Department of Agriculture has recently issued a new Farmers' Bulletin 765, Breeds of Swine. According to this bulletin, there is no best breed of swine. Some breeds are superior to others in certain respects and one breed may be better adapted than another to certain local conditions. The essential point is that after the farmer has once decided upon the kind of hog to raise he should stick to his decision and develop the chosen breed to its highest possible standard. It is not feasible for one individual to raise several different breeds and bring them to perfection. In making his choice, too, the farmer should be guided by the kind of breeds already established in his locality. If he selects one of these he is not likely to make a mistake.

There are two distinct types of swine, namely, the lard and the bacon types. Swine of the lard type far outnumber those of the bacon type in the United States. The lard type is preferred by the people of this country, consequently the majority of feeders produce a rapid fattening, heavy fleshed lard type. The bacon type is not raised extensively in the United States. The production of choice bacon is more general in those sections where the feed of the hog is more varied and where corn is not relied upon as the principal grain for hogs.

The principal breeds of the lard type are the Poland China, Berkshire, Chester White, Duroc Jersey, and Hampshire. The lard type of hog is low set and compact, with a very wide and deep body. The shoulders should be full although not coarse, with full hind quarters and hams carried out straight to the root of the tail and thickly fleshed down to the hock. The flesh should be thick and evenly distributed throughout the body.

The size and weight are largely determined by market conditions. At present pigs weighing from 175 to 250 pounds ordinarily command the highest prices.

The principal breeds of the bacon type are the Tamworth and large Yorkshire, both of British origin. The bacon type is very different from the lard type, being longer in leg and body, with less width of back, and lighter in the shoulders and neck. The first impression that this type conveys is one of leanness and lankiness. Much emphasis is laid on the development of the side, because it is the side of the hog that is used for the production of bacon. On the other hand, large, heavy hams are not desirable on a bacon hog.

Detailed descriptions of the various breeds, with discussions, are contained in the bulletin already mentioned.

TURKEY RANCHING.

Turkey ranching is a new industry born of the decreasing production of turkeys on farms, according to an article in the recently published 1916 Yearbook of the United States Department of Agriculture.

Exclusive turkey ranching is now found practically only in the unsettled foothill regions of California and in certain sections of Arizona and other Western States. In these regions a few persons are engaged in raising a thousand or more turkeys a season. The establishments are located where the range is unlimited and the natural food of the turkey, such as grasshoppers and other insects, green vegetation, and the seeds of various weeds and grasses, is abundant. Advantage also is taken on these ranches of the turkey's relish for acorns, and where these are plentiful but little grain need be used for fattening in the fall.

The large flocks of turkeys are managed much like herds of sheep, being taken out to the range early in the morning and brought home to roost at night. They are herded during the day by men either on foot or on horseback, and by dogs especially trained for the work.

Specialists of the department studying the production of concentrated fertilizers have worked out methods for producing ammonium potassium phosphate, potassium phosphate, and ammonium phosphate. These processes will be patented for the benefit of the people of the United States.

COST OF MILK.

Feed Accounts for One-Half or More of Cost of Production, According to Department Specialists.

A detailed study of the cost of producing milk on four farms, recently conducted by the United States Department of Agriculture, leads to the conclusions that on those farms feed accounts for one-half or more of the total cost, the remaining charges being divided about equally between labor and other items, such as shelter, use of equipment, use of bull, interest, depreciation, and overhead. The conclusions are based upon an exhaustive analysis of the business of the four farms, each of which is representative of a type of dairying. While the actual costs on the farms, as elsewhere, vary from year to year, the ratio between each item and the total remained nearly uniform when the same system of management was followed. It is believed, therefore, that milk producers throughout the country will find valuable suggestions in the report of this study, just published as Bulletin 501 of the Department of Agriculture, and entitled "The Cost of Producing Milk on Four Dairy Farms Located in Wisconsin, Michigan, Pennsylvania, and North Carolina," by Morton O. Cooper and C. M. Bennett.

The fact that the cost of feed is shown to be at least one-half of the total cost of producing milk on the farms is cited as evidence that the feed item is of great importance to the dairyman who seeks to reduce the cost of production. It is pointed out, however, that the greatest economy of production is not always attained by cutting down the feed cost, and that sometimes it is necessary to increase the feed bills in order to increase profits.

The question of feed supply is held to be one for individual solution. "Just how near the specialized dairyman should come to growing all the feed required by his dairy herd is a question of individual business management. One man may find it more profitable to grow all the feed required, while another may increase his profits by supplementing the income from cows with crop sales and purchase part of the feed. In a few localities in the United States crops may be selected that will not only yield a product for which there is a ready sale at good prices but which also leave on the farm much feedable material. Sweet corn is an example of this type."

It is pointed out that when this practice of supplementing the dairy business with the production of cash crops is feasible, it is often good business for the dairyman to sell crops and buy concentrates, and that "if by the growing of a cash crop, it is possible from the net receipts of 1 acre to buy a quantity of

concentrates equivalent to that which could be raised on 1½ or 2 acres, it would be folly to grow the concentrates."

In a discussion of the dairy labor problem, special attention is directed to a system of winter dairying practiced on one of the four farms, where profitable employment for labor was offered at a season when otherwise there would be little to do and yet summer work on crops was not interrupted.

Of particular interest to the dairyman who is considering the question of building up his herd is the fact that though it was found to cost more to keep the cow that gives a high yield than one that gives a low yield, the unit cost of the milk produced fell in all cases as the production per cow rose. Of perhaps greater interest to the average dairyman, however, is the further fact that "the decrease in the cost of milk per pound was much greater in the step from the poor cow to the cow of fair quality than in the step from the fairly efficient cow to the good cow or the exceptional cow." This fact is cited as evidence that "the first step in building up a poor dairy herd (that is, replacing scrubs with grades) is not merely the easiest step, but also the one which promises the most for a given expenditure of money and labor."

MELON FLY IN HAWAII.

Destructive Insect Introduced from Japan—Danger of Spread to Mainland.

The melon fly, a native of India, has increased to such an extent in Hawaii since its introduction there about 1895, and is so destructive, that some plants of the melon and gourd family can no longer be grown unprotected in the islands, while the production of all plants of this family, as well as many other truck corps, is injuriously affected. The pest is believed to have been brought to the islands from Japan. Specimens of the insect are being constantly intercepted at California ports in shipments of plants and plant products and there is great danger that it will be introduced to continental United States.

So far, no insect enemies of the pest effective under conditions in Hawaii have been discovered and no satisfactory artificial measures of control have been successfully applied there. Attempts to save cucumber and melon crops by spraying have been unsuccessful, though large numbers of adult insects were killed. It is believed that poisoned bait sprays would yield effective results under cultural conditions different from those of Hawaii. Some crops of the melon family are produced in Hawaii by covering the fruit with cheesecloth or similar material.

The larva of the melon fly which brings about most of the damage is pure glistening white, except as appearances are altered by the color of the various host fruits in its body. It is hatched from an egg deposited in the tissues of the host plant. Upon hatching, the larva usually burrows to the center of the host plant or fruit. When fully developed it emerges to pupate in the earth. The adult is a brown and yellow fly not quite one-third of an inch long. It feeds principally on the juices of host plants, upon which it may live for as much as a year. It is estimated that particularly hardy individuals deposit as many as a thousand eggs during their life, but the average number is much less.

COOPERATIVE ASSOCIATIONS.

Draft of a State Law to Permit Agricultural and Horticultural Organizations.

A draft of a bill for use by States desiring to provide for the organization of nonstock agricultural and horticultural cooperative associations has been drawn in the United States Department of Agriculture and, together with a letter explaining the circumstances under which the bill was prepared and the object to be accomplished, is published in Service and Regulatory Announcements No. 20 of the Office of Markets and Rural Organization. In shaping the bill an effort has been made to conform to the Clayton Amendment to the United States antitrust laws, which exempts from the operation of these laws "labor, agricultural, and horticultural organizations instituted for the purpose of mutual help and not having capital stock or conducted for profit."

The bill is drawn on the principle that every association created under it shall act exclusively as an agent for the member, and that if it act for a nonmember it shall do so also as an agent, the service to be performed at cost. It is sought by this application of the principle of agency to safeguard the nonprofit feature of such an organization. It is absolutely essential, the paper points out, that this feature be adhered to both in the organization and in the conduct of the association.

The bill would permit the association, as agent for its members, to perform services connected with the production, preservation, drying, canning, storing, handling, utilization, marketing, or sale of agricultural and horticultural products produced by them. It would also permit the association to perform for its members, in a similar way, services connected with the purchase or hiring of supplies, including live stock, machinery and equipment, and the hiring of labor. The membership of such organizations would be limited to persons engaged in agriculture or horticulture. Membership would be nontransferable, and each member would be entitled to one vote only, to be delivered in person or by mailed ballots. Voting by proxy would not be permitted.

The draft of the proposed bill was prepared in the department in compliance with requests from many officials and individuals. It is pointed out that the Department of Agriculture has no power to give an authoritative ruling as to the antitrust laws of the United States. It is suggested, therefore, that those who desire to make use of the bill drafted by the department, or to organize thereunder, should act with reference to the matter on the advice of competent counsel of their own choice.

Inoculation for alfalfa may best be accomplished by scattering over the area to be seeded surface soil taken to the depth of 4 or 5 inches from another field upon which the crop has been previously successfully grown. The soil should be broadcasted, at the rate of from 250 to 500 pounds per acre, and harrowed in immediately. The spreading should take place on a cloudy day or late in the afternoon, as the sun's rays are destructive to the germs. Soil from the roots of sweet-clover plants also will inoculate alfalfa. Care should be taken to avoid introducing noxious weeds or fungous diseases.

The summer seasons of 1913 and 1914 were characterized by almost the complete absence of destructive tropical hurricanes which generally frequent the waters of the Caribbean Sea and Gulf regions. In 1915, however, two severe storms passed over this region, and the observations and reports obtained from its stations enabled the U. S. Weather Bureau to give timely warnings of the occurrence and progress of these destructive storms, resulting, it is believed, in great saving of life and property.

The Bureau of Soils is now cooperating in making soil surveys with the authorities of 19 States. It is expected that this number will be increased to 25 States in 1918.

CIVIL SERVICE EXAMINATION.

An examination for positions of Cotton Entomologists in the United States Department of Agriculture will be held by the Civil Service Commission April 4, 1917. The examination is for men only, and applicants must be at least 20 years of age and have had one or more year's experience in the growing of cotton or in scientific investigations relating to cotton insects. The entrance salary ranges from $1,000 to $1,500 a year. Those interested should write the Civil Service Commission, Washington, D. C., for Form 1312.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., MARCH 21, 1917. No. 33

CARE OF SITTING HEN.

Certain Amount of Attention Necessary to Get Best Results—Test for Infertile Eggs.

The sitting hen, which is used most generally for incubation purposes on the farm, should receive a certain amount of care and attention during the process of hatching eggs. To a great extent the care given a sitting hen plays an important part on the number and condition of the chicks when hatched. With this end in view, the poultry specialists of the United States Department of Agriculture make the following suggestions:

If several hens are sitting in the same room, see that they are kept on the nests, allowing them to come off only once a day to receive feed and water, the feed to consist of corn, wheat, or both. If there are any that do not desire to come off themselves, they should be taken off. Hens usually return to their nests before there is any danger of the eggs chilling, but if they do not go back in half an hour in ordinary weather, they should be put on the nest. Where a large number of sitters are kept in one room it is advisable to let them off in groups of from four to six at a time. The eggs and nests should be examined and cleaned, removing all broken eggs and washing those that are soiled; in the latter case the soiled nesting material should be removed and clean straw added. Nests containing broken eggs that the hen is allowed to sit on soon become infested with mites and lice, which cause the hens to become uneasy and leave the nest, often causing the loss of valuable sittings of eggs. In mite-infested nests the hen, if fastened in, will often be found standing over rather than sitting on the eggs.

Many eggs that are laid in the late winter and early spring are infertile. For this reason it is advisable to set several hens at the same time. After the eggs have been under the hens from five to seven days, the time depending somewhat on the color and thickness of the shells—white-shelled eggs being easier to test than those having brown shells—they should be tested, the infertile eggs and dead germs removed, and the fertile eggs put back under the hen. In this way it is often possible to put all the eggs that several hens originally started to sit on under fewer hens and reset the others. For example, 30 eggs are set under 3 hens at the same time, 10 under each. At the end of seven days we find on testing the eggs from all the hens that 10 are infertile, which leaves us 20 eggs to reset, which we do by putting them under 2 hens, and have the remaining hen sit over again after she has sat only 7 days. In this way considerable time can be saved in one's hatching operations.

Testing Eggs for Fertility.

An egg, whether impregnated or not, has a small grayish spot on the surface of the yolk, known as the "germinal spot." As soon as a fertile egg is placed under a hen, or in an incubator, development begins. All eggs should be tested at least twice during the period of incubation, preferably on the seventh and fourteenth days, and the infertile eggs and dead germs removed. White eggs can be tested on the fourth or fifth day, while the development in eggs having brown shells often can not be seen by the use of an ordinary egg tester until the seventh day. Dead germs soon decay and give off a bad odor if allowed to remain under the hen. Infertile eggs make good feed for young chickens and are often used in the home for culinary purposes. Most incubator companies furnish testing chimneys with their machines, which will fit ordinary lamps. Electric or gas lamps may be used in a box with a hole slightly smaller than an egg cut in the side of the box and at the same level as the light. They may also be tested by sunlight, or daylight, using a shutter or curtain with a small hole in it for the light to shine through.

A good homemade egg tester, or candler, can be made with a large shoe box, or any box that is large enough to go over a lamp, by removing the end and cutting a hole a little larger than the size of a quarter in the bottom of the box, so that when it is set over a kerosene lamp the hole in the bottom will be opposite the blaze. A hole the size of a silver dollar should be cut in the top of the box to allow the heat to escape.

The eggs are tested with the large end up, so that the size of the air cell may be seen as well as the condition of the embryo. The testing should take place in a dark room. The infertile egg, when held before the small hole, with the lamp lighted inside the box, will look perfectly clear, the same as a fresh one, while a fertile egg will show a small dark spot, known as the embryo, with a mass of little blood veins extending in all direc-

(*Continued on page 4.*)

SAVING SEED POTATOES.

By Using Cones with Eyes Three-fourths of Flesh Can Be Used for Cooking.

The cost of seeding Irish potatoes can be greatly reduced, the garden specialists of the United States Department of Agriculture point out, if, instead of using a whole potato for planting, the gardener will cut out from potatoes cone-shaped pieces of flesh, each containing an eye of the potato. In this way only from one-fourth to one-fifth of the flesh of the potato will be needed to provide seed and the remainder of the potato can be cooked for table use. These cones range from one-fifth to one-seventh of an ounce in weight, whereas, under the usual methods, the sets range from three-fourths to 2 ounces in weight. A gardener, under ordinary conditions, will get best results by using 15 to 18 bushels, or 900 to 1,080 pounds of potatoes to the acre. This method of preparing sets, therefore, should make available for table use over 675 pounds of potato flesh, which, under ordinary conditions, would be planted per acre.

To plant a plot 50 by 100 feet, or approximately one-ninth of an acre, at the same rate of seeding, would call for 1⅔ to 2 bushels of seed, planted in the ordinary way. The method of using the cones and eyes for seed and cooking the remainder of the flesh, therefore, becomes a worth-while economy even when a small area is to be planted.

Under this plan it is not necessary to prepare the seed all at one time. From day to day the cones for seeding can be cut from the potatoes as they are being prepared for the table. The cuttings then should be spread out on a piece of paper in a moderately cool room (about 50° F.) and allowed to remain there until they have cured; that is, until the cut surface has become dry. A day or two should suffice for this, and potatoes then should be put in a shallow box or tray and placed where it is still cooler. Any storage condition that will insure them against frost on the one hand and undue shriveling on the other should prove satisfactory.

These seeds can be started indoors, provided it is possible to secure suitable soil and boxes. In such cases it may be desirable to plant the eye cuttings at once, and allow them to start into growth indoors with the idea of transplanting them into the open

ground when danger of frost is past and the ground is dry enough to be cultivated.

Small-sized sets require more care.—The smaller the size of the set, or seed piece, used the more thorough must be the preparation of the soil. The more finely the soil is pulverized and the more uniform the moisture conditions which can be preserved in the soil, the better is the chance for the small seed piece to establish itself. A small set in rough, lumpy, or dried-out soil has little chance to live, let alone make a crop.

Generally speaking, the smaller the size of the set, the closer it should be planted in the row if maximum yields are to be secured. Such sets may be expected to give the best yields if not spaced more than 10 to 12 inches apart in the row.

Preparing Soil for Potatoes.

The types of soil in which the potato plant thrives best are those designated as sandy or gravelly loam soils. It may be grown with a fair degree of success on any type of soil except loose sand and a heavy, sticky clay soil, provided the land is well drained and contains the necessary plant food.

Successful potato production is dependent to a large extent on the thoroughness with which the land is prepared before planting the crop. Where a horse can be used, the land should be plowed from 8 to 10 inches deep, provided the surface soil is of a sufficient depth to permit it. It is never advisable to turn up more than 1 inch of raw subsoil at any one plowing, so if previous plowings have not been over 6 inches the maximum depth at which it should be plowed is 7 inches.

Where hand labor is employed, the same rule should govern as to depth. In spading, especially on grass or waste land, turn the earth bottom side up.

Whether the land is plowed or spaded, *it should be thoroughly pulverized immediately afterwards.* It is a bad practice to allow the freshly turned soil to bake in the sun and wind, and thereby become cloddy, and, at the same time, lose a large per cent of its moisture.

Where horse labor can be used, the land after plowing should be thoroughly disked first, then spring-toothed, and finally finished with a smoothing harrow. Where land must be prepared by hand, it is good practice to pulverize the soil as much as possible when spading it up, after which it can be put in a fine condition of mellowness with a steel garden rake. The importance of thoroughly fining the soil can not be overemphasized, for it increases the water-holding capacity of the soil, renders more plant food available, and reduces the number of weeds.

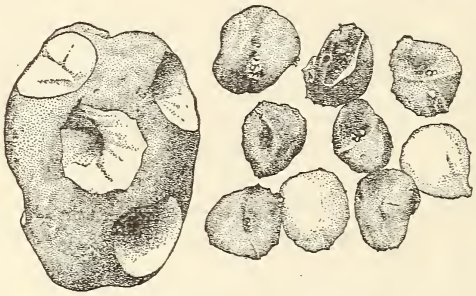
Varieties Adapted to Different Localities.

Early varieties.—In the northeastern United States and along the South Atlantic seaboard, the Irish Cobbler, Early Petoskey, or Early Standard, all of which are practically identical, may be expected to produce larger crops and be more generally satisfactory for an early crop than the others mentioned. Quick Lunch and New Queen would be regarded as second choices for this section.

In the South Central and Southwestern States, the Triumph may be expected to give results equal to or even better than the Irish Cobbler.

In the Middle West, the Early Ohio should do well, while the Early Harvest and Early Rose may be regarded as second choices.

Late varieties.—In the New England States, Long Island, and northern New York, the Green Mountain, Gold Coin, Delaware, and other late varieties of that class do best.



POTATO WITH CONES CONTAINING EYES CUT OUT FOR SEED.

In northern Michigan, Wisconsin, and Minnesota, the late varieties named above do about as well as the Rural New Yorker No. 2, and are superior to it in table quality.

In western New York, southern Michigan, and Wisconsin and Iowa, the Rural New Yorker No. 2, Sir Walter Raleigh, and Carman No. 3 are the best adapted varieties, and divide honors with the Green Mountain in the northern portions of these States.

Throughout Maryland, Virginia, and the Carolinas, Tennessee, and Georgia, the variety known as McCormick is quite generally grown as a late variety. In a favorable season the Green Mountain can also be grown.

When to Plant Potatoes.

The date of planting necessarily must be governed by climatic conditions. In attempting to produce as early a crop as possible, some risk must always be incurred of the plants being injured by late spring frosts. As a general proposition, it is best to plant potatoes as soon as there is little likelihood of killing frosts after the plants are up and the ground is in condition to work.

The following dates of planting for various cities should be regarded only as the approximate time at which early potatoes might safely be planted:

March 15–25. Washington, Baltimore, Philadelphia, Cincinnati, Louisville, St. Louis.

March 25–April 5. New York, Indianapolis, Detroit, Chicago.

April 5–15. Boston, Albany, Rochester, etc.

In the northern cities late varieties should be planted from three to four weeks later.

Depth to Plant.

Plant the small eye cuttings from 1½ to 3 inches deep, depending upon the character of the soil—the lighter the soil the greater the depth of planting. Larger sets may be planted 4 inches deep.

Spacing.

If an early variety is planted, and the work is to be done by hand, the rows may be spaced as close as 26 inches, whereas if cultivation is to be done with a horse, 30 to 34 inches usually is allowed. In order to give the gardener some idea of the number of sets required to plant a plot of ground 50 by 100 feet at different spacings, the following table is submitted.

If a late variety is planted, the spacing should be greater, say 34 to 36 inches between the rows and 12 to 14 inches between the plants in the row. The closeness of planting should be determined, first, by the variety and, second, by the amount of available plant food and moisture in the soil, or that can be applied to it.

To plant a plot 50 by 100 feet.

Space between rows.	Space in row between plants.	Sets required.
26 inches	10 inches	2,769
26 inches	12 inches	2,487
28 inches	10 inches	2,678
28 inches	12 inches	2,231
30 inches	10 inches	2,400
30 inches	12 inches	2,000
32 inches	12 inches	1,874
34 inches	12 inches	1,765

Yield.

Potato yields vary so greatly that only an approximate estimate can be given. If an early variety is grown, it is not too much to expect 12 to 15 bushels from a plot of ground 50 by 100 feet. Under favorable conditions this amount may be very considerably exceeded. In the case of a late variety, larger yields may be expected.

Full information regarding the preparation of the soil and the cultural requirements of potatoes is given in the following numbered Farmers' Bulletins: 365, "Farm Management in Northern Potato-growing Sections"; 407, "Potatoes as a Truck Crop"; 533, "Good

Seed Potatoes and How to Procure Them"; 544, "Potato-Tuber Diseases." All these may be obtained free from the U. S. Department of Agriculture, Washington, D. C., as long as the supply for free distribution lasts.

WM. STUART,
Horticulturist.

FARM WOODLANDS VALUABLE.

Since the farm forest, or woodlands, supply firewood, fence posts, poles, building and other timber necessary for successful agriculture, their protection and management become legitimately a part of farm work. By the sale of choice grades and surplus common products woodlands add directly to farm profits. The farm forest if properly handled is a bank account against which the owner can check each year in the form of timber removed without any reduction in capital.

In the value of forest products derived yearly from the farm, according to the last census, North Carolina led all other States. The materials, including firewood, fencing timber, logs, railroad ties, poles, naval stores, cooperage stock, and some other products, amounted in value to $11,364,134. This was an average for the 61.8 per cent of the farms reporting of $72 per farm. Forty-eight per cent of this amount represents the value of materials used on the farm, and the balance, or $5,949,674, the value of all cut products sold or for sale and standing timber sold.

Two-thirds of the total forest lands of North Carolina are in farms. These 12,450,000 acres of forested farm lands possess great possibilities for timber production. Fire protection is obviously far easier and more effective than over the large tracts in thinly settled, uncleared regions. The location near the homes of the owners and in regions of intensive local markets is very advantageous. Production can be brought to a high standard, and both cutting and utilization be carried on under the personal supervision of the owner. Farm woodlands should add a substantial amount to the farm income.

The tender nature of the young alfalfa plants requires that the soil be in excellent tilth at the time of planting. Many of the failures to secure a good stand may be traced directly to the improper condition of the seed bed. The aim should be to get the soil finely pulverized, thoroughly compacted, and comparatively free from weeds. The surface 2 or 3 inches should be fine and loose, and below this it should be sufficiently firm to favor the capillary movement of water, yet porous enough to permit good drainage and free circulation of air through the soil.

COTTONSEED MEAL.

Belief That It Injures Dairy Cattle and Impairs Quality of Butter not Justified.

The opinion prevalent in some sections that even the moderate feeding of cottonseed meal to dairy cows injures them and is detrimental to the quality of the butter is not justified, according to specialists of the United States Department of Agriculture.

Cottonseed meal, it is said, may be fed for years to dairy cows in properly balanced rations with no ill effect. It contains the highest quantity of protein of all the cow feeds ordinarily found upon the market. For that reason it is especially valuable as a means of balancing rations deficient in protein, when corn and corn products or other farm-grown feeds form a large proportion of the cows' feed. It should not be fed in excess at any time. As a rule, 2 to 4 pounds daily are to be considered a good feed in connection with other concentrates and roughage.

A feed sometimes sold on the markets of the South is called "cottonseed-meal feed," which is only a finely ground mixture of cottonseed hulls and cottonseed meal, and its feeding value is usually very much lower than that of pure cottonseed meal. Prime or choice cottonseed meal analyzes approximately as follows:

Digestible nutrients in cottonseed meal.

	Per cent.
Crude protein	37.0
Carbohydrates	22.0
Fat	8.6

The cottonseed-meal feed, on the other hand, has no standard analysis and its feeding value depends entirely upon the amount of hulls used in the adulteration. It probably often contains as low as from 15 to 20 per cent crude protein and has not more than half the feeding value of choice meal.

Experiments in the feeding of cottonseed meal to dairy cows have been conducted at the agricultural colleges of practically all the Southern States. They are unanimous in reporting that when fed in moderate quantities and in connection with other concentrates ordinarily available on the market, cottonseed meal is the cheapest source of protein to be had. At the South Carolina station, 5 or 6 pounds of cottonseed meal daily in connection with 25 to 30 pounds of corn silage were fed to dairy cows through a long period. The cows thrived and no ill effects from the feed were observed. In fact, they kept in remarkably good condition and were always ready for their feed.

The milk of cows heavily fed on cottonseed meal yields a hard, tallowy butter, light in color and poor in flavor. If, however, a moderate allowance is fed in a properly balanced ration, the quality is not impaired and may even be improved, if the other feeds tend to produce a soft butter.

Since cottonseed meal is a highly nitrogenous heavy feed, it should ordinarily be mixed with feeds which are bulky and lower in crude protein. A good mixture is equal parts of cottonseed meal and corn-and-cob meal, or cottonseed meal and wheat bran. It is not advisable to feed more than four or five pounds daily under any conditions, although much more has been fed without any perceptible bad effect on the animals. On account of its costive effect it is always best to feed it in connection with an ample quantity of succulent roughage, such as silage, roots, or green feeds.

HOMEMADE STERILIZER.

Will Help Farmers to Prevent Milk from Souring in Transit.

To assist milk producers to lessen their losses from milk which sours in transit and to help them comply with bacterial requirements set by local health officers, the Dairy Division of the United States Department of Agriculture this coming season will demonstrate its homemade steam sterilizer for dairy utensils in a large number of milk-producing centers. For this demonstration the department has had constructed more than 20 of the homemade sterilizing outfits. Already the health authorities in 150 cities have asked the department to send these outfits for local demonstration.

These outfits the department has offered to lend any local dairy official or health officer who will agree to demonstrate them in actual practice to milk producers in his locality. The outfits, which cost not over $15 and can be made by any local tinsmith, when placed on a range or a two-burner oil stove, generate steam enough to kill the bacteria in milk cans, pails, strainer cloths, and separator parts. At the same time the device removes foul odors, leaves the utensils dry as well as sterilized, and adds materially to their life. The sterilization of milk utensils is of importance to the dairyman who wishes to produce a good-flavored milk which will not sour readily. This is shown by the fact that milk cans, washed in the ordinary way, may harbor billions of bacteria, and milk contained in these cans is sure to have a high bacterial count, which tends to affect not only its keeping quality but its flavor as well. Other experiments show conclusively that milk which starts in sterilized utensils has a much better chance of reaching market in good condition than milk which has been handled in utensils that simply have been washed in the ordinary way.

The effectiveness of this homemade sterilizer has been fully proved both in the laboratory and on the farm. In one experiment 10 gallons of fresh milk were divided into two parts. Five gallons passed through a separator into a 5-gallon can, both utensils washed in the ordinary way, showed at the end of an hour 1,880,000 bacteria per cubic centimeter. The other 5 gallons, passed through a separator into a can, after both utensils had been washed and sterilized by means of the homemade sterilizer, showed only 24,000 bacteria per cubic centimeter.

As the dairy specialists point out, the milk handled in the sterilized utensils has a much better chance to keep sweet and good for a longer time than that which starts its journey to market already containing large numbers of organisms which will cause souring.

The department urges all dairymen in whose section the homemade device is to be demonstrated to attend these demonstrations. Ample notice will be given by local health authorities, in the newspapers, and through direct invitation. Those interested in the subject can obtain Farmers' Bulletin 748 on application to the department.

CARE OF SITTING HEN.

(*Continued from page 1.*)

tions, if the embryo is living; if dead, and the egg has been incubated for at least 46 hours, the blood settles away from the embryo toward the edges of the yolk, forming in some cases an irregular circle of blood, known as a blood ring. Eggs vary in this respect, some showing only a streak of blood. All infertile eggs should be removed at the first test. The eggs containing strong, living embryos are dark and well filled up on the fourteenth day, and show a clear, sharp, distinct line of demarcation between the air cell and the growing embryo, while dead germs show only partial development, and lack this clear, distinct outline.

CIVIL SERVICE EXAMINATION.

An examination for Statistical Scientist, for men only, in the Bureau of Crop Estimates, United States Department of Agriculture, will be held April 4, 1917. The duties of the position, which pays from $1,600 to $1,800 a year, consist of statistical research and the direction of statistical work. A college degree, or at least two years' experience in directing statistical work, is a prerequisite for consideration for this position. Those interested should write to the United States Civil Service Commission, Washington, D. C., for Form 1312.

One specially important characteristic of alfalfa is its long taproot system, which often extends several feet into the soil. This enables the plant to reach moisture and plant food in the soil which can not be secured by the more shallow-rooted crops.

HOME GARDEN HINTS.

The Soil, Water, and Fertilizer Requirements of a Successful Home Garden.

The damage done to garden crops by the recent widespread freeze has made it necessary for many owners either to replant gardens or to delay planting beyond the usual time. These gardeners whose outdoor schedules have been upset are under the necessity of doing everything they can to hasten their crops. The following suggestions regarding the principles and practice of gardening, the horticultural specialists of the United States Department of Agriculture believe, will be timely and helpful both to these gardeners and to others in localities where the planting season naturally is later.

The gardener who merely wishes to raise vegetables for his own family will do well, especially this year, to choose the crops he will grow from those which previously have done best in his special locality. The market gardener must bear this fact in mind, but also must study the market and anticipate its usual demand and determine as far as he can how this demand will be affected by any untoward weather conditions which may have occurred in his section.

Those who desire to produce early crops should bear in mind that a warm, sandy loam will produce an earlier crop than a heavier soil that retains more water and less heat. Frost is less apt to injure vegetables planted on high ground than those planted in low places or valleys into which the heavier cold air commonly settles. The garden should be fairly level, but well drained. The crop will mature more rapidly on land that has a sunny, southern exposure than in other plots.

The Essentials of Gardening.

The essentials for successful gardening on a small or large scale are soil, water, and cultivation. Much depends also on the grower, the season, and the crops selected.

The soil is the storehouse of plant food. The garden, therefore, should contain humus or rotted material in large quantities. The gardener should remember that about 50 per cent of ordinary earth is not soil at all, but consists of air and water.

Water makes plant food that is present freely soluble. Rain and snow water are soft and contain ammonia. The magic of soft water on the plant world is one of the miracles of good gardening, as every one who has contrasted the effect of rain with that produced by sprinkling with a hose realizes. Plants are succulent and contain large amounts of water which they have to draw from the soil.

The conservation of soil moisture is the most important reason for cultivating crops. The two other principal things accomplished by cultivation are the killing of weeds which draw moisture and plant food from the crops, and the aeration of the soil.

Too much stress can not be laid on the preparation of a good seed bed. A seed bed of fine tilth—made so by deep plowing, careful harrowing, and fining of the soil—is the foundation of good gardening. It is essential for the proper germination and growth of young plants. The soil must be friable and free from clods. A clod can hold no plant food in solution, the only form in which it is available for the plant. Good soil and fine tilth insure an excellent root system to plants. Upon the fine, hairy, fibrous, feeding roots, which are possible only in well-tilled soil, the plant depends for its stockiness and growth. The careful gardener will regard his whole garden as a seed bed and will cultivate and fertilize it accordingly.

Fertilizers.

Fertilizers, the plant food for the garden, should be carefully selected. Nitrogen, which stimulates leaf growth, is best supplied by turning under rich, well-rotted or composted manure, or rotting vegetable matter. Nitrogen also is supplied in such fertilizers as nitrate of soda and sulphate of ammonia, as well as in bone meal and tankage.

Potash tends to hasten the maturity of the plant, but also has a tendency to counteract the work of nitrogen. On this account those not experienced in using potash will find sulphate of potash better, or at least safer in most cases, than the muriate. On account of the disturbed commercial conditions one of the most available sources of potash is hardwood ashes.

Plants need a balanced ration. If they are lacking in nitrogen, they show pale leaf and stunted plant form. Excess of nitrogen is shown by large leaf and plant growth with imperfect fruitage. If the plants lack potash, they will not be fruitful.

Sheep manure will hurry plants along more rapidly than most chemical fertilizers.

The weather forecasts issued by the United States Weather Bureau are based on observations reported by telegraph twice each day, showing conditions at about 200 regular stations. Mail reports are received from about 4,500 additional stations and give detailed data for general meteorological and climatological studies. The United States Weather Bureau, in addition to supplying weather news to the newspapers, mails the daily forecast to more than 100,000 addresses. The weather service is also made available by telephone to more than 5,000,000 subscribers.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., MARCH 28, 1917. No. 34

EARLY VEGETABLES.

Seeds Planted in Boxes in the House Produce Much Earlier Crops Than Those Sown in the Open.

Home gardeners who do not own a hotbed and who can not readily buy young plants can get much earlier crops of tomatoes, cabbage, cauliflower, peppers, egg plant, and lettuce if they will start the seed for their early gardens in seed boxes in the house. Early potatoes sometimes are forced in the same way. Seeds so planted germinate and are ready for transplanting by the time it is safe to sow the same kind of seed in the open ground. When danger of frost is over and the soil is dry enough to work, therefore, the home gardener starts his early garden with seedlings well above the surface. Transplanting, if properly done, instead of hurting, seems to help such plants develop a strong root system. Garden enthusiasts should get a good deal of pleasure from this kind of preliminary indoor gardening. They also can use boxes to hasten the blooming period of many sorts of flowers which stand transplanting.

Any sort of wooden box filled with good soil answers the purpose. The following directions for making seed boxes and handling the plants have been prepared by the Bureau of Plant Industry and the States Relations Service, United States Department of Agriculture, for the guidance of the canning and gardening clubs in the North and West.

Making a Seed Box.

Seeds of early tomatoes and cabbage, as well as cauliflower and pepper, should be planted in a seed box in the house at once. The seed box should be 3 to 4 inches deep, 12 to 14 inches wide, and 20 to 24 inches long. A layer of about 1 inch of gravel or cinders should be placed in the bottom of the box, then it should be filled nearly full of rich garden soil, or soil enriched with decayed leaves or manure. The rich soil beneath the family woodpile or around decaying logs is splendid for this purpose. The soil should be pressed down firmly with a small piece of board and rows made one-fourth to one-half inch deep and 2 inches apart crosswise of the box. The seed should be distributed 8 or 10 to the inch in the rows and be covered. The soil should be watered and the box set in a warm place in the light, in the sunshine by a window being best. Water enough must be given from time to time to cause the seeds to germinate and grow thriftily, but not enough to leak through the box. If a piece of glass is used to cover the box, it will hold the moisture in the soil and hasten the germination of the seeds.

Take Out Surplus Plants.

When the plants are from an inch to an inch and a half high, they should be thinned to 1 or 2 inches apart in the row so as to give them space enough to make a strong stocky growth. If it is desired to keep the plants which are thinned out, they may be set 2 inches apart each way in other boxes prepared as mentioned for the seed box. When the weather becomes mild, the box of plants should be set out of doors part of the time so that the plants will "harden off" in preparation for transplanting to the garden later. A good watering should be given just before the plants are taken out of the box for transplanting so that a large ball of earth will stick to the roots of each one.

FOX FARMING.

Silver foxes a few years ago brought as high as $15,000 a pair in the open market. The enormous prices obtained at that time were due largely to speculative operations, according to a new publication of the United States Department of Agriculture, and ranch-bred silver foxes have recently been advertised for sale at from $500 to $1,000 a pair. With a comparatively large number of silver foxes in domestication, with a clearer understanding of their successful management, and with a return of moderate prices for breeders, a steady, healthy, and general development of silver fox farming is predicted. How and where fox farming may be undertaken with the promise of any degree of success is fully discussed in the publication mentioned, Farmers' Bulletin 795, "The Domesticated Silver Fox," which may be had on application to the United States Department of Agriculture, Washington, D. C.

Fall plowing is desirable for alfalfa in sections in the east where early summer seeding is practiced. If fall plowed, the land should be thoroughly disked as soon as it will work up well in the spring, and should then be harrowed until seeding time at intervals sufficiently frequent to keep down the weeds and to make a perfect seed bed.

THE PAPER OUTLOOK.

National Pulp Resources—Importance of Conserving Forests—Utilizing Waste Wood.

The Secretary of Agriculture, D. F. Houston, on March 18 issued the following statement:

Conditions in the paper industry have constituted one of the most serious of our domestic problems during the last year. Due to the exorbitant prices charged for news print, the profits of the great dailies were either wiped out entirely or else reduced to a minimum, while the small publishers were brought face to face with suspension and even absolute ruin. Periodical publishers have fared no less badly, the profits of book publishers have changed to losses in many cases, and the price of paper of every kind has risen by leaps and bounds.

The Federal Trade Commission has brought some measure of relief to the newspaper publishers. Competition has been freed from restraint, prices have been made to bear a closer relation to the cost of production, and a more equitable system of distribution has been devised so that the "little fellows" will get their fair share of the manufactured product. But, while the inquiry of the commission developed artificial control, it developed also that there is almost an equal balance between supply and demand in the paper industry.

The Growing Use of Paper.

In 1914 we used about 5,000 tons of news print every day. Our present use has reached 6,000 tons a day and the demand appears to be increasing at the rate of 10 per cent a year, materially faster than the increase in population. To supply our presses with news print requires annually about 3,000,000 cords of pulp wood. To meet our requirements for magazine and book paper, stationery and business papers of all forms, wrapping papers, wall papers, cardboard, fiber board and the like, 4,000,000 cords more of pulp wood are consumed annually. Production barely keeps pace with this consumption. For instance, the estimated demand for news print for the first six months of 1917 is 888,000 tons. Against this is placed an estimated supply of 930,000 tons.

Dependence upon Foreign Supplies Unnecessary.

As if this close balance was not peril enough, there is the added fact that the

United States depends upon Canada for a third of its news-print paper, either in the form of finished product or raw material. This proportion is increasing rapidly. The pressure of economic conditions and lack of foresight in cutting the forests have so depleted the available private supply of pulp woods in many of the paper manufacturing States that there is not enough left to last more than 10 or 15 years. As a consequence, Canada is more and more called upon for pulp woods, and American manufacturers are showing an increasing disposition to slip across the border into the virgin forests of the Dominion.

It is this condition of dependence that should be ended. Changes in Canadian policy might at any time cut off our newspapers from this source of supply or make it available only at excessive cost. On the other hand, our own forest resources are ample to meet all the paper requirements of the country. Aside from the waste materials produced in the manufacture of lumber and the possible growth on 65,000,000 or 70,000,000 acres of cut-over forest lands in the Northern States, the publicly owned national forests contain enough pulp wood to supply the entire paper need of the United States for the next 80 years. Cut intelligently it constitutes virtually an inexhaustible supply for all time.

Raw Materials Available in the West.

The Forest Service has estimated the pulp wood in the national forests at 300 billion feet. This means 600,000,000 cords, and for all paper of all kinds we use but 7,000,000 cords a year. There are other large supplies of pulp wood on privately owned lands in the West. These western raw materials are much cheaper than the woods now used by paper mills in the Northeast. While pulpwood stumpage in the Northern States costs from $2.50 to $5 per cord standing in the forest, first-class western timbers are available at prices ranging from 25 cents to $1.50 per cord. Long-distance transportation and the large investments tied up in paper plants necessarily will retard the westward expansion or migration of this industry; but unquestionably it should afford one means of increasing the production of paper to keep pace with current demands.

The Two Western Paper Wood Belts.

From the standpoint of geographical location and transportation to the bulk of the paper users in the Central and Eastern States the western paper woods fall into two broad belts. The first is available to tidewater shipments from the Pacific coast, lying principally on the west slope of the Cascade Mountains in Oregon and Washington, including vast areas tributary to Puget Sound, and running up along the seaboard in southeasterly Alaska. There are 70 billion feet of spruce and hemlock in the national forests of Alaska alone. In many respects its conditions as to abundant forests of paper-making woods, water power, and direct tidewater transportation duplicate those of Norway, the leading country of the world in its paper industry. It is a safe prediction that in the last analysis the value of Alaska to the United States as a source of paper will be found to exceed the value of any other of her enormous resources, coal, minerals, or fisheries.

The second timber belt of western paper woods extends through the northern Rocky Mountains from the Canadian line into Colorado and Utah. This belt, shut off from water transportation, can hardly be considered a practical source of supply of paper for the Eastern States, but is a logical storehouse of raw materials for the paper requirements of the Mississippi Valley. The Rocky Mountains contain a number of excellent paper woods and with proper development should supply both the paper required for local consumption and that necessary to replace the diminishing supplies of the Lake States for the needs of the Middle West.

News-Print Paper from New Varieties of Wood.

Extending the supply of raw materials by determining the paper-making qualities of new woods is an important factor in the problem. Tests conducted by the Forest Products Laboratory of the Department of Agriculture have demonstrated the suitability for various grades of paper of no less than 12 new or little used woods, including Englemann spruce, lodgepole pine, white fir, and other cheap and abundant coniferous woods of the Western States. At least 10 of these woods were proved good enough for news print, and papers made from some of them actually were used in editions of the New York Herald and St. Louis Republic.

Water Power and the Paper Industry.

Almost equal in importance to the timber of the Pacific coast belt and the Rocky Mountain belt are the publicly owned water powers, a second primary essential of the paper industry. Undeveloped power is there in sufficient quantity and available for exploitation and use under reasonable measures of Government control. This is equally true with respect to coal, almost as important in paper manufacture as pulp wood itself. Both in Alaska and in the Rocky Mountain region the Federal Government owns great coal fields of tremendous richness, abundantly able, so the experts report, to supply every national need for many years. The one problem to be faced is that of the best means of utilization. How may our tremendous natural resources be given the quickest and most effective relation to the national needs?

Making the Public Forest Resources Available.

The first plan is that of public sales of raw material to the manufacturers. This already is being done to some extent. During the last year national forest timber sales to lumber companies, railroads, and mining companies and one western paper mill amounted to $1,795,000. This plan calls for contractual relations between the Government and private capital. New mills might be erected in Alaska, the Puget Sound country, or the Rocky Mountain region, under agreements with the Government for a long-term supply of raw material, guaranteed under an equitable adjustment of prices from time to time. This already is being done in the case of certain sawmills. Such contracts may readily contain provisions which give the public effective control of possible industrial combinations or monopolies.

Practicable to Manufacture News Print in Alaska.

Experts of the Forest Service report that it is entirely practicable to manufacture news print in Alaska and deliver it to New York through the Panama Canal at a cost of not more than $35 a ton. When it is considered that recent prices have ranged from $60 a ton upward, it is evident that an excellent competitive basis exists for the introduction of western papers.

The development of private paper plants in the West might be supplemented by the erection of mills by the Federal Government itself. It is estimated that a mill with a capacity of 100 tons of news print a day can be built in Alaska for two and a half million dollars. Even if the output of the mill was confined to the needs of the Government alone, it is probable that such a mill would pay for itself in no great length of time, while adding something to the paper supply of the Nation.

Should the Federal Government Enter the Industry?

The fundamental problem is to build up paper production in the United States to keep pace with a growing demand and afford a sufficient supply at all times to hold prices at reasonable levels. To the extent that private enterprise will do this, it would appear unnecessary for the Government to undertake it, particularly if the publicly owned forests can be utilized for the purpose under conditions which give the public control of industrial organizations. In the event that private capital can not be enlisted, however, to meet the needs of a larger paper supply available at fair prices, it may well be that the Federal Government should enter the industry as a direct method of controlling the situation.

Use of Wood Now Wasted.

These are the larger aspects of the situation. There are certain direct and simple approaches, however, that call for nothing more than greater economy. The waste which now occurs in the manufacture of

lumber is estimated by the Forest Service at something over 60,000,000 cords annually. At least 40,000,000 cords consists of coniferous woods, a part of which is suitable for the manufacture of various grades of paper, although the cost of assembling it in sufficient quantities to support a paper plant is often prohibitive. Experiments at the Forests Products Laboratory show that much of this waste can be utilized for the manufacture of kraft wrapping papers, fiber board, and other pulp products. In the case of sawmills that cut up spruce, hemlock, etc., the waste can often be gathered and shipped with profit to news-print mills.

The use for pulp of waste material left after lumbering recently has been introduced in the lumbering operations in Pennsylvania and parts of the South. Hemlock tops and broken, defective logs are peeled in some Pennsylvania lumber camps, cut into 5-foot lengths, and sold for pulp wood. From 250,000 to 260,000 cords of slab wood and other mill waste are now consumed every year for pulp. In 1908, hemlock formed 41 per cent of the sawmill waste used, and its average value was $4.07 per cord, about two-thirds that of hemlock cordwood in the round. In Wisconsin, sawmills often sell their hemlock slabs to paper mills for from $2 to $3 per cord. This is a form of conservation that should be given speed and drive.

Forestry the Ultimate Solution.

So much for the immediate problem of supplying the paper requirements of the United States to-day. For the second phase of the problem, that of an assured future supply of paper within our own borders, there is only one solution: The practice of forestry to keep up a continuous production of pulp wood. There is nothing difficult about this solution if the latent producing capacity of the forest lands in the United States is utilized. There is no reason why the regions now supporting large paper-making plants should not do so permanently, as Norway does, if the native resources of those regions are but properly organized and intelligently used. The production of pulp woods, in fact, offers one of the best opportunities for forestry in the United States because small, quickly grown material can be utilized for this purpose, and because many of the fastest growing trees, like poplar or Norway spruce, are adapted to it.

With intelligent cutting and protection from fire, the land will restock itself. Unintelligent cutting that "skins" the land, however, may call eventually for artificial reforestation. Denuded land can be planted with 1,000 young trees per acre, nursery grown, at a cost of about $10 per acre. Some of the paper companies in New England are acquiring and protecting large areas of forest land, many of them culled or cut over, in order to insure a future supply of raw material to protect the enormous investments represented by their paper plants. In a few instances a limited amount of planting has been done. Considerable areas of inferior pasture land, worn-out farms, and the like in New England have been restocked with trees, either through a gradual reversion to forest by natural causes or by artificial planting, because their owners have realized that these lands of low value could be utilized to the best advantage by producing wood.

An Aggressive Public Forest Policy Needed.

In other sections, like considerable portions of the Lake States, reforestation is not coming about through economic development, or is coming about so slowly that it will be far behind the need of forest-using industries for raw material. In such regions public initiative and enterprise must take the lead. Probably the greatest need is for an intelligent, far-sighted administration of the forest lands now in public ownership, in one form or another, and for the addition of cut-over forest lands of low value to the public holdings, State and Federal alike.

Practically all European countries have found that a considerable body of publicly owned forests was essential in working out their problem of keeping up continuous forest production. The United States will prove no exception to this rule; and the building up of State and Federal forest holdings under expert nonpartisan administration is one of the most important steps to insure a future supply of paper as well as other basic forest products.

On the 165,000,000 acres of Federal forest holdings in the national forests, the timber is being used under scientific methods of cutting as there is demand for it, and the lands denuded by old fires are being reforested by planting to the extent of 20,000 acres annually. Federal holdings also are being extended by purchase in the Eastern States, under the Weeks law, for the protection of navigable streams.

State Forest Reserves.

A number of States have made valuable beginnings in this direction. Pennsylvania has acquired State forest reserves aggregating more than a million acres and consisting largely of culled or cut-over lands which the State has been able to purchase at low valuations. New York has extensive State holdings; Wisconsin and Michigan both have small areas; Minnesota recently has passed a constitutional amendment which will permit the creation of permanent State reserves. All these efforts, in the aggregate, fall far short of the need. Particularly in the Lake States, in whose early economic development forest resources probably had the largest part, is there a general lack of an intelligent public conception of this problem and of adequate measures toward its solution.

The right kind of land ownership is fundamental in working out the problem of a sustained supply of lumber, paper, and other essential forest products. There must be a stable interest which insures permanent forest production. This may be supplied by general economic development. Otherwise, it must be supplied by the far-sighted point of view of the community, either through direct public ownership or a sufficient measure of public control to secure the results necessary.

Build up State Forest Departments.

An immediate necessity in the accomplishment of this object is to build up the forest departments of the various States—to get behind fire protection, to push reforestation of State lands, to demand acquisition of permanent forest reserves, and to support expert investigative work in forestry. Expert classification of receded tax lands should have an important place in this development. Cut-over lands not suited to agriculture or which have but a low or questionable value for tillage should be kept by the States and added to their forest reserves so that an aggressive public policy of reforestation may be pursued. This is one line of attack upon the vital and general problem of how to put all classes of land to their most productive use.

Forest Lands are Public Utilities.

Another thing that must be brought about is full recognition of the public interest in all forest lands. It is not enough that the State should look after its own holdings; it must extend its authority to the management of private holdings as far as may be necessary to meet public needs. We must recognize, in other words, that forest lands have, in a measure, the nature of public utilities.

A first step in such regulation is compulsory fire protection, the starting point of forestry. Not only, however, should each land owner be required to do his share in preventing or suppressing forest fires, but the public itself should cooperate by furnishing the necessary machinery for correlating and directing this work as a whole. The State of Oregon has taken an advanced step in this direction, through a law making the protection of timbered lands obligatory upon their owners and authorizing the State forester to protect lands whose owners fail to discharge this duty. The cost of such protection, within limits prescribed by the act, becomes a lien against the property. At the same time the State itself expends a considerable sum for a system of fire wardens upon which the entire protective organization is built up and correlated.

In many cases, the protection of cut-over forest lands from fire is sufficient. In other cases it should be supplemented by the enforcement of simple forestry measures, such as the disposal of slashings and the regulation of cutting to make certain that the land will be left in a condition which will insure its regrowth.

With public regulation, however, should go a vigorous encouragement of private owners to keep their forest lands continuously at work and thus do away with the economic loss represented by the idleness of millions of acres of "skinned" land. Such encouragement is justified by the community benefits afforded by the reforestation of private lands and the burdens imposed upon their owner in deferring income from them. The community may share in these burdens, as it shares in the advantages of reforestation, by applying the yield or harvest tax to forest lands which are properly managed so as to meet their public obligations. The owner thus will be released from the burden of annual property taxes, paying instead a tax on the returns from his property at the intervals when its wood crops are harvested. This concession, of course, should apply only to owners whose lands are kept in continuous forest production.

A number of the States have taken progressive steps in accord with some of these suggestions. Their local forest departments furnish the groundwork for building up and expanding the forest activities of the State. The Department of Agriculture also stands ready to give aid and encouragement. Experts of the Forest Service are available to advise with State legislatures regarding forest legislation and to cooperate with State commissions or local associations of citizens in developing the forest policy of the State.

NEW FARMERS' BULLETINS.

Goose Raising. (No. 767.)

Feeding and Management of Dairy Calves and Young Dairy Stock. (No. 777.)

Powder-post Damage by Lyctus Beetles to Seasoned Hardwood. (No. 778.)

How to Select a Sound Horse. (No. 779.)

Tuberculosis of Hogs. (No. 781.)

Anthrax or Charbon. (No. 784.)

Seed-flax Production. (No. 785.)

Fall-sown Grains in Maryland and Virginia. (No. 786.)

Mushroom Pests and How to Control Them. (No. 789.)

Citrus-fruit Improvement. How to Secure and Use Tree-performance Records. (No. 794.)

In 1915 the United States imported more than 3,837,000 pounds of soy beans, valued at approximately $87,000; nearly 6,000,000 pounds of cake, valued at $64,000; and over 19,000,000 pounds of oil, valued at nearly $900,000.

The area devoted to the cultivation of tobacco in the United States in 1915 was 1,368,400 acres. The production of tobacco was 1,060,587,000 pounds, and the farm value on December 1, 1915, $96,041,000.

HOME GARDEN HINTS.

How Much Vegetable Seed to Plant for a Family of Four—Plan Garden Before Planting Time.

Vegetable seed for planting should be ordered at once, so as to be on hand as soon as the weather and condition of the soil make planting possible. Before ordering seed the home gardener would do well to look over his garden plot, decide on the best location for each vegetable, and determine how much seed he will require for the space available for each variety.

He will find it helpful to make a rough plan of his garden on a large sheet of wrapping paper. On this plan he can indicate the spaces to be used for each variety and also by means of colored pencils or symbols show where a second crop is to be planted or interplanted between growing rows and also arrange for the second and third crops which are to follow those previously harvested. Such a plan will enable him to keep the garden busy all season, supplying fresh vegetables during the summer and producing in the late fall root and other crops for winter use. Once the heavy preliminary spading and working of the garden has been done it is about as easy to raise two or three crops as to keep the garden clean of weeds to produce only one picking. The specialists advise those who are not used to gardening or wish to have their children take an interest in the garden to hire a laborer to do the heavy preliminary spading or breaking up of the soil. This heavy work frequently disgusts novices and children who would continue to take an interest in the garden if their task was simply to fine and cultivate soil already broken up.

Seed for a Family of Four.

The following amounts of seed the garden specialists of the United States Department of Agriculture say are needed to plant approximately 100 feet of row, or enough to supply vegetables for a family of four:

Beans, snap	pint	1
Beans, pole Lima	do	½
Beans, bush Lima	do	½ to 1
Cabbage, early	ounce	½
Carrot	do	1
Cauliflower	packet	1
Celery	do	1
Cucumber	ounce	½
Eggplant	packet	1
Kale, or Swiss chard	ounce	½
Parsley	packet	1
Parsnips	ounce	½
Salsify	do	1
Squash, summer	do	½
Squash, Hubbard type	do	½

The following vegetables, the specialists say, will undoubtedly be planted in larger amounts than those just mentioned, and the amounts of seed given will be a guide for ordinary requirements. Some families may need more of the various vegetables and others would need less:

Beet	ounces	4
Cabbage, late	do	½ to 1
Corn, sweet	pint	1
Lettuce	ounce	1
Muskmelon	do	1
Onion sets	quarts	2
Peas, garden	do	2 to 4
Radish	ounces	1 to 2
Spinach:		
In spring	pound	¼
In fall	do	½
Tomatoes, late	ounce	¼
Turnips	pound	¼
Watermelon	ounce	1

The string beans, bush Lima beans, sweet corn, lettuce, peas, and radishes will not all be planted at one time, but successive plantings two or three weeks apart will be made so as to have a fresh supply throughout the season.

Of early Irish potatoes 1 peck to ½ bushel will be required, and of late potatoes ½ to 1 bushel, or more, depending upon the amount of ground available for this purpose. If possible, enough Irish potatoes should be grown to last throughout the winter.

In the event that the family wishes to raise vegetables to supply current needs and also to supply a surplus for canning, the amounts indicated above should be considerably increased.

The home gardener should find useful Farmers' Bulletin 255, Home Vegetable Garden, and Farmers' Bulletin 647, Home Garden in the South. The latter is designed particularly for use in the warmer climates, but contains many suggestions that can readily be adapted by home gardeners in the North. The Department of Agriculture will supply these bulletins free on application as long as its stock for free distribution lasts.

CIVIL SERVICE EXAMINATIONS.

Plant Pathologist.

An examination for Pathologist in charge of Forage Crop Disease Investigations in the Bureau of Plant Industry, U. S. Department of Agriculture, is to be held by the Civil Service Commission on April 10, 1917. The entrance salary for this position, which is for men only, is $1,800 to $2,000 a year. A college degree and at least three years' postgraduate work in plant pathology are prerequisites for consideration for this position. The duties of the position consist of laboratory and field work on the causes and control of diseases of forage crops, especially alfalfa and clover. Those interested should apply to the Civil Service Commission, Washington, D. C., for Form 2118.

Assistant Chemist in Forest Products.

An examination on April 18-19 is announced by the Civil Service Commission for the position of Assistant Chemist in Forest Products, at the Forest Products Laboratory, Madison, Wis. The entrance salary ranges from $900 to $1,500 a year. Applicants must have graduated in chemistry or chemical engineering from a college or university of recognized standing or be students who will graduate within six months of the date of the examination. The work deals largely with the economic and technical problems concerning the utilization of the products of the forests of the United States. Those interested should write the Civil Service Commission, Washington, D. C., for Form 1312.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., APRIL 4, 1917. No. 35

STOP FOOD-CROP WASTES BY IMPROVING METHODS.

Secretary of Agriculture Urges Farmers to Adopt Precautions to Secure Maximum Return from Acreage Planted—Seed Selection, Seed Disinfection, Spraying, Control of Insects and Pests Important—Storing, Canning, Drying, or Preserving of Surplus Products a Patriotic Duty.

The Secretary of Agriculture, D. F. Houston, on March 27, issued the following statement:

"Both for economic and patriotic reasons the American farmer should strive this year for the highest standard of efficiency in the production and conservation of food. But production accomplished by wasteful methods does not make for efficiency, and careful thought, therefore, should be given to the steps that need to be taken.

"At this, the approach of the growing season, it is pertinent to consider steps which should be taken during the starting or the growing of crops to prevent or eliminate wastes. In the case of the great staple cereals, which constitute a large proportion of our food supply, conspicuous production wastes result from failure to give proper attention to the selection and safeguarding of seed for planting, the preparation of the land, and the care of the crop. For instance, only varieties known to be well adapted to the region where planted should be selected, so that in case of such a crop as corn the grain will not fail to mature properly in a normal season. The planting of seed that will not germinate often results in great loss of time, labor, and money which could have been avoided by testing the seed for germinability before planting.

"In some sections the damage to crops by destructive diseases and insects is the most conspicuous crop waste. Economically sound and efficient production necessitates protection of crops against these pests. Disinfecting dips for seed and sprays and spraying for growing crops now have been developed to a point where they afford for certain crops a form of insurance that farmers can not afford to neglect.

Secure Maximum Returns from Seed.

"Under existing conditions every precaution should be taken (1) to reduce production wastes by testing seed sufficiently in advance to insure against the planting of dead seed; (2) to treat with disinfecting dips all seed subject to diseases that can be prevented, such as the smuts of wheat, barley, oats, and rye, the losses from which are estimated conservatively at $50,000,000 to $60,000,000 in the United States in the average year; (3) to prepare especially thoroughly for planting these vitally important cereal crops and to care for them as may be necessary during the season.

"If seed is of high quality but short in quantity, some reduction in the quantity used per acre sometimes can be made with profit if the soil is especially well prepared and the seeding done carefully. Under favorable conditions as good a stand of oats can be obtained, the specialists of the department have found, by drilling 2½ bushels per acre as by sowing 3 bushels broadcast, with resultant increase of yield per acre as well as increase of acreage planted.

"Where spring wheat is planted, and to some extent barley and the grain sorghums, varieties should be sown that do not shatter, especially in the drier districts. No grain should be allowed to become dead ripe before cutting, because of the tendency to shatter when in that condition. Most farmers probably will find it possible to locate and prevent important wastes if at the beginning of the season they will give the matter serious thought and undertake to correct such wasteful practices.

Guard Against Potato Diseases.

"In the case of the northern staple vegetables, such as potatoes, cabbage, and onions, of which the supply is short as the result of unfavorable climatic conditions in 1916 in the commercially important producing districts, it is considered especially important to reduce the risk of waste due to the action of insects and diseases during the growing period. With the potato, the seed stocks of which are low, every precaution necessary to reduce the risk of disease damage, including the treatment of the seed potatoes for scab before planting and equipment for thorough spraying while the crop is growing, should be taken.

"A widespread outbreak of late blight throughout the important potato-producing districts (which, fortunately, rarely occurs except in restricted areas) might diminish potato production at the rate of 3,000,000 bushels a day during August and September if prolonged warm and rainy weather should occur. This disease can be prevented by spraying, and early preparation should be made to combat it vigorously. Potato diseases of a preventable character frequently reduce the crop by from 50,000,000 to 100,000,000 bushels. While not entirely preventable, they should be guarded against to the fullest extend possible.

"Sweet potato losses from black rot, foot rot, and other diseases in the field result mainly from failure to select and disinfect seed and to practice sanitation in the beds. Bean losses from anthracnose and other diseases can be prevented to a large extent by the use of disease-free seed. The obtaining of such seed should receive special attention this season.

Disposal of Surplus—Prevention of Waste.

"Some of the most conspicuous crop wastes occur with fruits and vegetables, of which, in normal years, larger quantities usually are grown than the producers can market profitably. Frequently these losses are due indirectly to disease and insect injury, which lowers their market value without reducing their food value materially if they can be utilized promptly by drying, canning, or other preservative methods. Under existing conditions, every practicable step should be taken to protect these crops throughout the season and to utilize and preserve them as fully as possible when they have matured.

"To the extent that competent labor is available, either hired or in the family, fruits and vegetables which ordinarily it is inadvisable to attempt to conserve should be systematically saved for use by canning, drying, or preserving. These operations should not be delayed until late summer and autumn; and family gardens should be

planned to supply ample quantities of early-maturing small fruits and vegetables for canning, drying, or preserving, as well as fresh products for the table. Because of the scarcity of tin plate and the high price of tin cans, it may be necessary in household preservation of food more extensively to pack fruit and vegetables in other containers. This situation may call for new methods of preserving or the improvement and extended use of old processes, such as drying.

"In the Southern States, approximately 50,000,000 bushels of sweet potatoes are produced annually, and it is estimated that at least 10,000,000 bushels of these are lost annually by decay. Frequently wholesale waste occurs at harvest time, not only of sweet potatoes, but of white potatoes and other underground food crops, through lack of proper storage facilities to safeguard the crop from destructive freezes at digging time. Early this season plans should be made and executed in the building of suitable farm storage houses or cellars. This usually can be done at relatively low cost if undertaken in time. In view of the experience of the past year, it would appear that surpluses of such vegetable crops as are capable of preservation by drying for soup stock, such as carrots, potatoes, celery, etc., could be preserved profitably for food use in regions where fruit evaporators which could be utilized for this purpose already exist. Surplus sweet corn, if cut at the proper stage, can be sun dried or oven dried, as in earlier years before systematic canning of corn was developed, and, in this way, be preserved for food use.

"Certain crops grown annually to a considerable extent for soil improvement or forage possess large food value if utilized properly. Among such crops are soy beans, cowpeas, peanuts, kafir and other grain sorghums, the food and oil producing value of which has not been recognized adequately until recently. Increased utilization of these for human food and oil production doubtless will be advisable.

"Under the conditions in which the country now finds itself, it is important, as has been pointed out, that everything practicable be done to increase the efficiency of agricultural activities during the coming season. I have called attention to a few of the steps that may be taken to this end. It is desirable that throughout the country farmers confer among themselves on these and other matters affecting the production of needed crops and that they consult freely with county agents, State agricultural agencies, and the Department of Agriculture."

Because of its low starch content, soybean flour is used as a constituent in many so-called diabetic breads, biscuits, and crackers.

WINTERKILLED WHEAT.

Specialists Advise What to Do When Wheat Has Been Winterkilled in Eastern and Great Plains Areas.

Reports from different sources indicate that there is some winter killing of winter wheat in many sections of Kentucky, Tennessee, Illinois, Indiana, Ohio, Missouri, Oklahoma, Kansas, and Texas, and of hard red winter wheat in the western and southwestern plains, particularly in Kansas and Oklahoma, although whether the extent of the damage is more than the average is uncertain.

Where there has been winter killing the question arises as to the best course for the farmer to pursue. The following procedure is recommended by the cereal specialists of the United States Department of Agriculture:

Advice for Eastern Area.

"If the crop is not more than half killed, it may be advisable to let it grow and depend upon natural stooling or tillering of the remaining plants to produce a crop. Even fields in which a majority of the plants have been killed may give a profitable yield. In other fields the stand may be so thin that it is not advisable to depend upon the few surviving plants for a crop, while in still other cases all the plants may be killed. The question is then whether or not to sow spring wheat either with or without plowing. If the farmer is in a locality where he knows spring wheat is sometimes grown and he can get good seed of an adapted variety, it may be well for him to sow this. The seed can be sown sometimes in the winter wheat field without plowing, thus adding to the plants of winter wheat that remain. However, if the winter wheat is almost or entirely killed, the land should be at least disked or perhaps plowed before seeding.

"Seeding of spring wheat at all is recommended only for the northern part of the winter-wheat belt. Therefore spring wheat should not be sown in Missouri, Kentucky, Tennessee, West Virginia, or Maryland, or anywhere farther south, and probably not in any portion of Illinois, Indiana, Ohio, or Pennsylvania. Other crops probably would be better in these States.

"Where winter wheat is killed and spring wheat seeding is not advisable, corn would usually be the crop to be planted, though soy beans, potatoes, or such small grain crops as barley or oats may be given preference, depending on the locality and on the possibility of procuring good seed and the proportional return per acre that may be obtained by using these crops."

Advice for Great Plains Area.

"If the crop is not more than half killed, it may be advisable to let it grow and depend upon natural stooling or tillering of the remaining plants to produce a crop. Even fields in which a majority of the plants have been killed may give a profitable yield. It should be borne in mind that hard winter wheat tillers even better than many other varieties and in that way a thin stand will be unusually increased.

"In case of severe injury, where wheat is largely or entirely destroyed, it is better to plant some other crop, which should be corn where this crop will grow to advantage. In the extreme western portions of the Plains States, from Nebraska southward, milo or kafir usually would be better than corn.

"In the western portions of Kansas, Oklahoma, and Nebraska, spring wheat, particularly durum, may be profitably sown instead of tilled crops. The durum wheat will give better results in these districts than any spring common wheats. Durum wheat, however, should never be sown as a mixture in fields of winter wheat which has been partly winterkilled, as it is difficult or impossible to sell the mixture under normal market conditions. It should be sown only where the winter wheat field is plowed and completely resown.

"If it is desired to sow spring common wheat in thin stands of red winter wheat, a variety with hard red kernels should be chosen, such as Marquis or Preston. The use of spring common wheats should be confined to the extreme western and northwestern portions of Kansas and adjacent Nebraska. Usually spring wheat and winter wheat can not be harvested well together because of difference in the time of ripening.

"In the true spring-wheat districts, where all seeding has yet to be done, it appears from reports so far that there will be only a barely sufficient supply of seed if quality is taken into consideration. It is important to give careful attention to the germinating power of the seed."

COMMUNITY DAIRYING.

What Five Years of Cooperation Have Done for One Iowa Community.

What can be accomplished in dairy districts by community action is indicated in an article in the 1916 Yearbook of the United States Department of Agriculture. In this article the results of five years' work in an Iowa community are discussed in detail. During that period, it is said, the net profits to the patrons of a small creamery were increased from $2,060 in 1911 to $9,643 in 1915. For the five-year period the total net profits were increased $32,169. Against this increase there is to be charged only the salary and expenses of the Government field man, amounting to $11,196. As a result, therefore, of the development of the work the

community received in the course of five years $20,973 more than it otherwise would have done.

These increased profits were obtained by the elimination of unprofitable cows, the introduction of better bulls, more improved feeding methods, and placing on the market products of better quality. The growing of such feeds as clover, alfalfa, and silage corn reduced the cost of milk production, and the herds received more adequate shelter and a better water supply in the winter, thus being enabled to give satisfactory yields of milk through a larger portion of the year.

Progress in these directions is to be attributed chiefly to the influence of the field man among the farmers. It was under his direction that the farmers began to give serious attention to the problem of feeding for large and economical milk production. He also introduced the practice of keeping production records for each cow and of eliminating all animals that reacted to the tuberculin test. The expense of raising calves was reduced by shifting them earlier from whole milk to skim milk. The milking was done under more sanitary conditions and the milk and cream treated with greater care. In this way the quality of the butter was improved and the better product brought better prices. With these better prices the farmers had more money with which to improve their business. In this connection it is noteworthy that during the 5-year period covered by the article mentioned, the number of silos in the community was increased from 7 to 44.

In conclusion, the article points out that, while the financial gain from the work is the easiest to measure, it was by no means the only, or even the most important, part of the total results from this experiment in community development in dairying. The improvement in the social conditions and in the living conditions in the farmhouses is not to be ignored, although it is very difficult to measure it.

While millet and proso apparently would contribute somewhat to the protein of human diet, experiments conducted by the Office of Home Economics, United States Department of Agriculture, to determine the digestibility of these grains, seem to indicate that they would be decidedly more important as a source of carbohydrates. In this respect proso and millet, in the opinion of the investigators, resemble the sorghums more closely than they do wheat or rye, which are important sources of both protein and carbohydrates.

An excellent way of providing iron-rich greens in the winter diet is to put up young beets with the tops left on.—Office of Home Economics, United States Department of Agriculture.

TREAT SEED POTATOES.

Soaking in Disinfecting Solution Tends to Improve Germination and Lessens Danger of Scab.

The disinfection of seed potatoes by soaking in corrosive sublimate or in formaldehyde is recommended by the United States Department of Agriculture as a measure that will tend to improve the germination and lessen the danger of scab.

Such treatment is, on the whole, profitable, but has several limitations which should be clearly recognized to prevent disappointment. The object of disinfecting seed potatoes is to destroy the germs of scab and other surface parasites which might otherwise be planted with the seed and infect the new crop. Only surface infections are reached by this method. It is only partially effective against deep pits of common scab. Neither corrosive sublimate nor formaldehyde, as ordinarily used, will destroy silver scurf. Either one will kill surface infections of blackleg, but neither will reach the internal infections common in tubers from blackleg hills. Neither Fusarium wilt nor late blight infection in potato tubers can be reached by any seed treatment, nor can any of the nonparasitic diseases of potatoes, such as mosaic, leaf roll, and curly dwarf, thus be prevented. See Farmers' Bulletin 544 for descriptions of these troubles.

Select Disease-Free Seed.

Clearly, therefore, the most important precaution against these diseases is to select clean, disease-free seed potatoes from healthy, vigorous plants, as determined by field inspection during the growing season and at harvest. Seed treatment should then be applied as an additional precaution. It will not be effective, however, if the soil where the potatoes are to be planted is already full of disease.

Soil Conditions and Potato Diseases.

Soil conditions have an important relation to potato tuber diseases, and many of these are widely spread throughout the country, and perhaps native to some soils. Common scab is favored by a neutral or slightly alkaline soil, and seldom gives trouble in acid soils. It, therefore, is increased by liming and by fresh stable manure, wood ashes, and alkaline fertilizers, such as nitrate of soda and ground bone, while acid phosphate and sulphate of ammonia tend to diminish scab.

Rhizoctonia occurs to some extent in nearly all soils, but appears to attack potatoes most when the conditions are unfavorable to the best development of the potato plant. Bring the land to an ideal state of tilth to minimize loss from Rhizoctonia.

Powdery scab is worst on cold, wet, or poorly drained soils. Blackleg, on the other hand, is carried by infective seed. *No potatoes showing a deep brown discoloration at the stem end should be planted.*

Sulphur tends to prevent common scab. It is not a substitute for corrosive sublimate or formaldehyde, but is a good drier for cut seed. Applied to scab-infected soils at the rate of 500 pounds per acre, it reduces the scab, but such heavy applications can not generally be recommended as profitable. Preliminary experimental trials are advised.

How to Disinfect Seed.

It is considered better to treat potatoes before they are cut into seed, especially if the cut seed is to be very small. Put into the solution all the potatoes it will cover and keep the batch covered by the solution for the period named under the treatment being used.

The *formaldehyde treatment* consists in soaking the potatoes, before cutting, for two hours in a solution made by adding 1 pint of formaldehyde to 30 gallons of water. The solution can be used repeatedly. The gas treatment is no longer recommended.

The *corrosive-sublimate treatment* is more effective than formaldehyde, particularly against Rhizoctonia, or russet scab, and powdery scab. Corrosive sublimate is used at the rate of 1–1,000 for one and one-half to two hours. Dissolve 2 ounces of the salt in hot water and dilute to 15 gallons. *This is a deadly poison. Use with great care.* It must be kept in wood, porcelain, or glass vessels, as it attacks metal. Seed so treated must not be used in the household or left where animals can reach it.

In using the corrosive-sublimate dip, it has been found that the solution becomes weaker each time it is used. The degree to which the disinfectant is taken out of the solution varies according to the amount of dirt on the potatoes, the character of the water, and the kind of container. For practical purposes it will be sufficient to add 1 ounce of dissolved corrosive sublimate to each 30 gallons of solution after each batch of potatoes has been treated. When this has been done four times throw away the old solution and prepare new solution.

To treat large quantities of potatoes set several barrels on a slightly elevated platform. Fit a plug in a hole in the bottom of each barrel, fill with potatoes, cover with solution, let stand two hours, draw off solution, and pour into another barrel. Increase the number of barrels in proportion to the quantity to be treated. Another method is to use a large wooden vat or trough, into which the potatoes in sacks are lowered by a rope and pulley and later hauled out, drained, and dried on slatted racks.

Seed potatoes may be treated several weeks before planting, provided they are not reinfected by storing in old containers or storage bins.

Sprouted potatoes are injured by treatment, but will throw out new sprouts. In general, however, potatoes will not be injured by following the above directions. Many growers believe germination is improved by treatment.

HOME GARDEN HINTS.

Tips on How to Meet Soil Requirements of Vegetables—Certain Amount of Sunlight a Necessity.

Practically all truck crops do better on a sandy loam soil than on one that is sticky and heavy. Larger-sized crops, however, such as cabbage, tomatoes, beans, and peas, will do well on heavy soil provided it contains the necessary vegetable matter.

The soil in most back-yard gardens is distinctly heavy. It will help the soil greatly if the owner works into it a good amount of finely sifted coal ashes free from all cinders. Coal ashes are used largely for the physical effect in breaking up a compact, heavy soil. Such ashes do not take the place of fertilizer.

Plentiful use of well-rotted manure is still more beneficial in breaking up heavy soil because this improves the texture and adds fertilizing material.

Many garden soils are sour. To offset acidity and also to improve the physical properties of the soil the garden specialists recommend the use of lime. Burnt lime should be applied at the rate of 1,000 pounds to the acre or slaked lime at the rate of about 1,500 pounds per acre. A garden plot 50 by 100 feet is approximately one-ninth of an acre.

To apply the lime, broadcast it and mix it freely with the surface soil by harrowing or raking. Lime should be applied before the crops are set out or planted and should not be applied at the same time that fertilizer or manure is put on.

Manure will greatly improve land. If well-rotted manure is not available, it may be advisable to use a complete chemical fertilizer. Apply at the rate of 800 to 1,000 pounds per acre a mixture containing 2 to 4 per cent nitrogen, 8 per cent phosphoric acid, and 1 to 2 per cent potash. The amateur gardener will find it easier to use ready-mixed fertilizer, which can be obtained from any reliable dealer.

Sunlight Necessary for a Garden.

No amount of fertilizer, water, and cultivation will make up for the absence of sunlight in a garden. Home gardeners before attempting for the first time to use a back yard or other space should consider carefully how many hours a day any part of the yard is in shadow from buildings, fences, or trees. At least five hours of sunlight a day is necessary for a successful garden. The more sunlight they get the better it is for most vegetables. For this reason it is bad practice to put plants of low habit between tall-growing plants which will shade them for the greater part of the day. As a rule, foliage crops such as lettuce, spinach, and kale do fairly well in partial shade, but even these must have sunshine two or three hours a day. In laying out the garden, therefore, use shadier parts for such plants and reserve the sunny spaces for those which must have plenty of sunlight to grow and fruit properly.

SEWAGE DISPOSAL.

Important Part of Farm Sanitation Which Should Receive Greater Attention.

Because the sewage from homes is a poisonous substance in which the specific germs or poisons of numerous serious diseases may lurk, much greater care should be taken by dwellers in the country in the disposal of the wastes than is usually bestowed on the matter. This is pointed out in an article, "Sewage disposal on the farm," in the 1916 Yearbook of the United States Department of Agriculture.

Infection from such a source often is transmitted insidiously and may come from the swirling dust of the railway roadbed, from personal or indirect contact with transitory or chronic carriers of disease, from green truck grown in gardens fertilized with night soil or sewage, from food prepared or touched by unclean hands or visited by flies and vermin, from milk handled by sickly and careless dairymen, or milk cans and utensils washed with polluted water from wells, springs, brooks, and lakes receiving the surface wash or the underground drainage from sewage-polluted soil, and from many other sources.

The cardinal principle in sewage disposal, it is pointed out, whatever the system and methods employed, is to have the waste materials finally deposited far from wells and other sources of water supply.

A number of methods of sewage disposal, including the use of cesspools and septic tanks, are described in detail in the article. The latter method it is believed generally is the safest and least troublesome. Though the proper disposal of sewage will involve some considerable expenditure of money, there is little ground, the article states, for the more or less general belief that the benefits of good plumbing and sewer systems cost little in the city but are almost prohibitive in the country. The greater value of property per family in rural communities when compared with that of some cities where efficient sewage systems are in existence should justify the necessary expenditure for adequate means of sewage disposal in the country. The actual construction and plumbing work can be done, it is pointed out, more cheaply in the country in most cases than in the city.

SWEET-POTATO DISEASES.

Specialists Offer Suggestions for Control of Diseases at Bedding Time—How to Disinfect Seed.

Some of the worst sweet-potato diseases live from one season to the next in the soil and on the old decayed potatoes bedded for a previous crop, according to the specialists of the United States Department of Agriculture. For that reason it is essential that fresh soil or sand be used every year. Under no circumstances use soil for the hotbed from fields where sweet potatoes previously have been grown. Instead go into the woods, if possible, and throw off 6 inches of the surface and take subsoil. Sand will do just as well. If soil can not be obtained from the woods, it may be taken from a new field where sweet potatoes have not been grown before.

It is essential also that the framework of the hotbed be disinfected by spraying with a solution made by adding 1 pint of formalin to 30 gallons of water. Similar results may be obtained by whitewashing the framework. Better still, spray with winter strength lime-sulphur solution.

In the spring before being bedded the potatoes should be disinfected by immersing for from 5 to 10 minutes in a solution of corrosive sublimate, made by dissolving 1 ounce of the crystals in 8 gallons of water. *This is a deadly poison. Use with great care.* Treated seed should not be left where animals can reach it. Only wooden containers should be used for disinfection. After disinfection the potatoes should be immediately rinsed in pure water and dried or bedded at once.

Just enough of the solution should be put in the barrel or receptacle used for disinfecting to cover the quantity of potatoes to be immersed each time. The solution should not be used more than three times, since it loses its strength and effectiveness upon repeated use.

After the potatoes are disinfected, any showing evidence of disease, either on the surface or at the end, should be thrown out. Frequently it is in these bruised, calloused, and decayed spots that the disease germs are concealed. It should be remembered that the disinfection is to kill the germs loose on the surface of the potato and that the treatment does not kill the germs concealed in the decayed, bruised, and calloused spots on the surface and at the end.

During the last decade three states—California, Colorado, and Michigan—contained three-fourths of the area under sugar beets in this country and produced three-fourths of the beets and sugar.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., APRIL 11, 1917. No. 36

U. S. WHEAT STANDARDS.

Secretary of Agriculture Establishes and Promulgates Standards under Grain Standards Act.

The official grain standards of the United States for wheat were fixed, established, promulgated, and published March 31, by the Secretary of Agriculture, under the authority given in the grain standards act. The standards are to become effective as follows: Standards for hard red winter wheat, soft red winter wheat, common white wheat, and white club wheat are to become effective on July 1, 1917. The standards for all other wheats, including spring wheats, are to become effective on the 1st day of August, 1917.

The use of these standards after they become effective is required for wheat shipped from any point in the United States in interstate or foreign commerce and sold, offered for sale, or consigned for sale by grade. The act, however, permits the interstate or foreign shipment of grain sold by sample or by type, or under any description which is not false or misleading, and does not include any of the terms of the official grain standards.

The standards for wheat promulgated divide wheat into the following classes and subclasses:

Class I. Hard Red Spring.—This class shall include all varieties of hard red spring wheat, but shall not include more than 10 per centum of other wheat or wheats. This class is divided into four subclasses, as follows: Dark Northern Spring, Northern Spring, Red Spring, Red Spring Humpback.

Class II. Common and Red Durum.—This class shall include all varieties of durum wheat, but shall not include more than 10 per centum of other wheat or wheats. This class is divided into three subclasses, as follows: Amber Durum, Durum, Red Durum.

Class III. Hard Red Winter.—This class shall include all varieties of hard red winter wheat, but shall not include more than 10 per centum of other wheat or wheats. This class is divided into three subclasses, as follows: Dark Hard Winter, Hard Winter, Yellow Hard Winter.

Class IV. Soft Red Winter.—This class shall include all varieties of soft red winter wheat, also red club and red hybrid wheats of the Pacific Northwest, but shall not include more than 10 per centum of other wheat or wheats. This class is divided into three subclasses, as follows: Red Winter, Red Walla, Soft Red.

Class V. Common White.—This class shall include all varieties, except Sonora, of common white wheat, whether winter or spring grown, but shall not include more than 10 per centum of other wheat or wheats. This class is divided into two subclasses, as follows: Hard White, Soft White.

Class VI. White Club.—This class shall include all varieties and hybrids of white club wheat, and the common white wheat known as Sonora, but shall not include more than 10 per centum of other wheat or wheats.

Each subclass of wheat is divided into six grades, described as No. 1, No. 2, No. 3, No. 4, No. 5, and Sample Grade.

All standards are fixed on a dockage basis. This contemplates that in the grading of the wheat all weed seeds, sand, and the like will be removed by proper sieves and that the residue of wheat will be graded according to its quality and condition.

In addition, the regulations provide for methods of grading mixed wheat, smutty wheat, and treated wheat.

The order establishing the wheat standards defines bases of determination of percentages, dockage, mixed wheat, smutty wheat, treated wheat, test weight per bushel, percentage of moisture, heat-damaged kernels, and inseparable foreign material.

Section 4 of the order provides that any grain which, when free from dockage, contains more than 6 per cent of grain of a kind or kinds other than wheat shall not be classified as wheat.

The standards are published as Service and Regulatory Announcements No. 22, Office of Markets and Rural Organization, United States Department of Agriculture, which will be sent, on application, to those interested.

Solid as the turnip roots appear, they contain on an average about 89 per cent of water, or a trifle more than is found in whole milk. The flavor of the turnip, like that of its relatives, the cabbage and the radish, is due principally to compounds of sulphur, which are so volatile that when turnips are fed to cows these compounds pass into the milk and give it an unmistakable flavor.

HOW TO SELECT FOODS.

How the Housekeeper Can Provide a Ration That Will Give the Best Returns for the Money Spent.

Adults and children must get several different substances from the food they eat or they will miss something which is essential to bodily efficiency and health, according to the nutrition specialists of the United States Department of Agriculture. The housewife, therefore, who plans her meals or attempts to save money on food without some knowledge of these substances and of the five simple groups of foods which supply them is very liable to omit from her meals some food essential for the growth of children or necessary to supply the family with the energy they need for their daily tasks. Attempted economy which entirely omits certain foods may well prove a very poor investment because of its ultimate effect on the well-being of the household. Price, individual preference for certain foods, and even the fact that hunger is satisfied after a meal, are not safe guides. Tomatoes at ten cents apiece in winter are no more nutritious than they are at five cents a quart in summer. A child might crave much more sugar than would be good for him. A bulky diet of potatoes or bananas might make a person feel he had eaten enough, but would not furnish him with the elements that his body needs.

To plan out meals in the interest of family efficiency and economy at the same time, the housewife fortunately does not need to do elaborate sums in calories or to have any intimate understanding of such terms as "protein" and "carbohydrates." All she needs to do is to classify the food she uses into five simple household groups laid down in recently issued Farmers' Bulletin 808, published by the Office of Home Economics, United States Department of Agriculture. The purpose of the bulletin, which is the first of a series of simple pamphlets dealing with the economical use of foods, is to enable the average housewife to plan her meals effectively, even though she has no special training in chemistry or dietetics.

The substances which the specialists find are needed in the daily diet to maintain the body may be grouped under seven heads: Mineral substances, protein, starches, sugars, fats, cellulose, and certain little-known but

very important growth-stimulating substances.

A Day's Food Requirements.

That these essential substances are not difficult for the average housewife to provide is shown by the following combinations which the specialists believe indicate the daily food requirements of normal individuals:

FOR A MAN.

A man who does fairly hard muscular work would be likely to get the food which his body needs if supplied daily with such a combination of foods as the following:

One and one fourth pounds of bread (having about the same food value as 1 pound of such cereal preparations as wheat or rye flour, oatmeal, corn meal, rice, etc.).

Two ounces, or ¼ cup, of butter, oil, meat drippings, or other fat. Two ounces, or ¼ cup, of sugar; or ⅓ cup of honey, or sirup, or an equivalent amount of other sweet.

One and one-fourth pounds of food from the following: Fresh fruits and fresh or root vegetables.

Twelve ounces of food from a class which may be called "meats and meat substitutes;" that is, moderately fat meats, poultry, fish, eggs, cheese, dried legumes (beans, soy beans, peas, lentils, cowpeas, and peanuts). Milk also belongs among these foods, but because of the large amount of water it contains, half a glass, or 4 ounces, of it would be required to equal an ounce of any one of the others.

A man who works hard out of doors all day probably would need more food than this, and one who sits all day at his desk would need less. The amounts given are suitable for a man who, like a salesman in a store, walks about more or less and does more or less of such work as lifting.

FOR A FAMILY OF FIVE.

A family consisting of a man and a woman, who do moderately hard muscular work, and three children—say, between 3 and 12 years of age—would get the food they require if supplied daily with—

Four and one-half pounds of bread, having about the same food value as 3 pounds of wheat or rye flour, oat-meal, corn meal, hominy, or rice; or about 2¾ pounds of such cereals and 5 or 6 medium-sized potatoes.

Three-fourths cup of fat (butter or butter with oil, beef drippings, or other fat)—a weekly allowance of 2½ to 3 pounds.

A little more than 1 cup of sugar, or a weekly allowance of 4 pounds; or an equivalent amount of some other sweet, such as 1¼ cups of sirup or honey a day, or ¾ pound of dried figs or raisins a day.

Four pounds in all of fresh fruits and fresh or root vegetables.

One of the two following, the choice depending on the age of the children:

Three quarts of milk and 1 pound of other foods taken from the meat and meat-substitute group.

Two quarts of milk and 1½ pounds of other foods taken from the meat and meat-substitute group.

Cereals Used Freely.

In these combinations of food, it will be noted, bread and other preparations of cereal food are used as freely as they conveniently can be, without making the ration one sided or unattractive. A diet equal in nourishment might be planned with less cereal, but this would make it necessary to increase the amounts of more costly foods, such as meat, fruits, and vegetables.

Cereals can be used freely without making the diet monotonous if they are served in a variety of forms and combined with other nutritious or flavoring materials, such as meat, cheese, onions, celery, tomatoes, and other vegetables and dried, cooked, or fresh fruits.

Sample Meals for a Family of Two Adults and Three Children.

The food materials indicated as being required may be combined into three meals in many ways. The following meals are given not because they are recommended above many others that might be prepared, but simply to show that such foods can be combined into dishes commonly used in American homes. These meals supply during the day all of the eight essential substances and also provide flavorings and condiments which, while not important as sources of nourishment, add to the attractiveness of certain foods.

BREAKFAST.

Fruit, 1¼ pounds of fresh fruit (equivalent to 3 medium-sized oranges, 5 small apples, or a quart box of strawberries) or 3 or 4 ounces of dried fruits (equivalent to 10 or 12 dates or 4 or 5 figs).

Cereal breakfast food, 4 ounces before being cooked, or about 1½ pints after it is cooked. The equivalent in food value in puffed or flaked ready-to-eat cereals would be 5 or 6 cups.

Milk on cereal, ¼ cup to each person.

Sugar on fruit, on cereal, or in coffee, 2½ level tablespoons or 1¼ ounces.

Bread, 8 slices, or 8 ounces.

Butter, 1¼ ounces, or 2½ cubic inches.

An egg, or 2 ounces of meat, fish, or poultry for each older person, and a glass of milk for each young child.

DINNER.

Meat, or fish, ¼ pound per grown person; or, for each child, an egg or a glass of milk.

Potatoes (5 medium sized), 1¼ pounds.

Another vegetable (turnips, spinach, corn, cauliflower, or other), 1 pound.

Bread, 8 slices, or 8 ounces.

Butter, 1¼ ounces, or 2½ cubic inches.

Steamed apple (or other fruit) pudding. (Ingredients: Two cups flour, 2 tablespoons butter, ¾ cup milk, 4 apples, 1 tablespoon sugar.)

Sauce. (Ingredients: One-half cup sugar, 1½ tablespoons flour, 2 teaspoons butter, ¼ cup water, flavoring.)

SUPPER.

A gravy made out of 1 pint of skim milk, ¼ cup flour, 2 level teaspoons butter, and 4 ounces salt or smoked fish (just enough for flavor). To this can be added the egg yolk left from the frosting of the cake. (See below.)

Rice, 8 ounces, or 1 cup, measured before being cooked.

Bread, 8 slices, or 8 ounces.

Butter, 1¼ ounces, or 2½ cubic inches.

One-half of a cake. (Ingredients for whole cake: One-fourth cup butter, ½ cup sugar, 1 egg, ½ cup milk, 1½ cups flour, 2½ teaspoons baking powder.) Frosting made with 1 egg white and ¼ cup sugar.

Why the Various Substances Are Important.

The mineral substances, such as lime salts, compounds of phosphorus, iron, and others, are supplied largely by vegetables. They serve the body as building material, tend to counteract acidity in the body tissues and fluids and are useful in other ways. Vegetables and fruits, therefore, should not be neglected in the diet, especially as they supply also another substance, cellulose, the framework material of plants, which gives bulk to the diet and tends to prevent constipation.

Protein, a substance supplied by meat or meat substitutes, including milk, is a very important fuel and body-building material. It provides an element—nitrogen—needed to form body tissues, not only during growth in childhood but also to make good the wear and tear of use in persons of any age, thus keeping the body in repair. Absence of foods supplying protein would give a diet lacking in body-building materials.

Different kinds of starch, sugar, and fat are important fuels of the body.

The last group of substances is present in very minute quantities. These minute quantities are believed, however, to be vitally important to the body because of their effect in promoting growth in the young and in keeping the body well.

Succulent vegetables of all sorts contribute bulk to the diet, and so are valuable from the standpoint of hygiene, because within limits bulkiness is a favorable condition for normal digestion and also of importance in overcoming a tendency to constipation. They are also among the important sources of necessary mineral matters in the ordinary diet.

POULTRY IN BACK YARD.

Suggestions for Care of Small Flock of Hens—Economy Depends Primarily Upon Egg Production.

From 12 to 25 hens are sufficient to provide the ordinary family with enough eggs and meat to render the keeping of the birds worth while, according to poultry specialists in the United States Department of Agriculture. The amount of outdoor space the flock will require may be estimated at about 25 square feet for each bird. There are instances in which chickens have thrived with much less than this, but unless the soil is especially favorable and the birds receive unusually good care, crowding is likely to prove unprofitable.

Poultry specialists do not recommend, however, that every one with the requisite space at his disposal should go in for chicken raising. Unless there is a natural interest in poultry or a determination to make the flock a source of real economy, even if it does take time and trouble, the venture is not likely to prove successful. Lack of care may result in disease that will sweep off the entire flock, and it is almost certain to cause a reduction in egg production that will make the birds a burden instead of a help. In some localities where municipal ordinances may prohibit the keeping of poultry within certain limits, care should be taken that the poultry yard is not in a proscribed area.

Space for a Flock.

While it is possible to get along with 25 square feet per bird, a larger space affording more green and insect food is very desirable. For one thing, the ordinary poultry keeper wishes to perpetuate his flock, and the raising of young chickens requires as much land as the keeping of mature hens. After she is 2 years old the best laying days of the average hen are over, and it usually pays to get rid of her. This means that half the flock must be renewed each year. Since as many cockerels as pullets will be hatched and a certain percentage are certain to die, it is customary to hatch each year a few more chickens than there are hens in the flock. With a flock of 25, for example, about 30 chickens should be raised. The same space must be allowed for these as for the laying hens. The cockerels are consumed through the season, being used either as broilers when they are about 3 months old, as fryers, or as roasters.

It is also most desirable as a precaution against disease to divide the available area into two plats. On one of these the chickens are allowed to range while a green crop—wheat or oats, for example—is being grown for them on the other. The preliminary turning under of the soil, the green crop, and freedom from chickens for a period serve to prevent the land from becoming contaminated.

Additional range, with the advantage of a large supply of insect feed for the birds, may sometimes be obtained where a vegetable garden is maintained. At different times in the growing season there are areas in the garden which are either idle or occupied only by crops that the hens will not touch. The birds, confined to these with the aid of a portable fence, benefit without injury to the vegetables.

Some Housing Required.

An important item to be considered by those thinking of maintaining a home flock is the cost of the house. For some part of the year, at least, in almost every section of the United States, chickens require the shelter of a tight, dry building. In planning the house, approximately 4 or 5 feet of floor space should be allowed for each bird. The height may be determined by the convenience of the operator, for the birds themselves need only 2 or 3 feet. Such low houses, however, are very difficult to clean, and in consequence are likely to be neglected. It is better to build them so high that a man may work in them without discomfort.

A not uncommon device is to use a piano box for a chicken house. The cost of these houses depends largely upon circumstances, though no estimate can be given. It may be possible to find one the owner will be glad to give away; and, on the other hand, one may have to pay $1.50 or more for a box that is no better. By combining two piano boxes a very satisfactory shelter for a small flock can be made at little expense. Where lumber must be purchased, it has been estimated that the materials for a substantial chicken house may cost anywhere from 50 cents to $1 per bird, and it is not unlikely that with the present prices of commodities of all kinds these figures will be somewhat low. Portable chicken houses are also on the market at costs varying greatly. The majority, however, will probably cost the owner from $1.50 to $2 for each bird sheltered by them. In any event, it is probable that unless there is plenty of spare lumber available and the prospective poultryman happens to be a good carpenter, the cost of the chicken house will not be met by the value of the products over the cost of feed for the flock for a year or two. The house should last, however, for a number of years, especially if painted and well cared for. Substantial profits from the investment should be made thereafter.

In many cases, also, where the surroundings are such that the chickens can not be allowed to range at will, the cost of fencing must be considered. This obviously will vary greatly with the size of the area to be inclosed and the kind of fencing selected. Ordinary chicken wire is not expensive.

Cost of Keeping Chickens.

The actual economy secured by the keeping of a small flock of chickens depends primarily upon their egg production, and this in turn is largely a matter of care. Under favorable conditions, however, it is estimated that 150 eggs the first year and 120 the second is a fair return from the ordinary hen. On the other hand, at least from 25 to 50 cents a year must be expended for grain and other feeds, the exact amount depending upon the quantity of table scraps and green and insect food available. Where all the feed must be purchased, from $1 to $1.25 is allowed. Even in the most thrifty household, however, there is always a large quantity of table scraps, vegetable parings, and other "left overs" for the hens, so that a considerable portion of their feed consists of what otherwise would be carried off the place by the garbage man.

Although of less importance than the eggs, the supply of poultry for the table furnished by the home flock is an item that can not be overlooked. As has been pointed out, in a flock of 25 which the owner is perpetuating there will be approximately 12 or 13 cockerels, almost all of which can be used best for food. Half of the hens must go each year also, so that allowing for losses and for birds reserved for breeding there still will be enough appreciably to affect the butcher's-bill.

Studies on the digestibility of some animal fats conducted by the Office of Home Economics, United States Department of Agriculture, indicate that chicken fat, goose fat, brisket fat, cream, egg-yolk fat, and fish fat are all well assimilated and that they are satisfactory sources of fat for the dietary. Since butter fat, eaten in the form of cream, and egg-yolk fat are very thoroughly digested and easily obtainable and apparently contain or carry with them accessory food substances necessary in the diet for growth and general well-being, a wide use of these two fats in the dietary is especially desirable.

It is estimated, from a recent investigation made by the Bureau of Crop Estimates, United States Department of Agriculture, that nearly 56 per cent of the apple crop is sold from farm or orchard, 10 per cent is used in the manufacture of cider, 19 per cent is consumed on the farm for food purposes, and the remaining 15 per cent is wasted or eaten by live stock.

Spring and early summer seedings of alfalfa, unless the weeds threaten to choke out the young plants, should not be clipped until they are 12 to 15 inches high and beginning to bloom. The cutter bar of the mower should be set high, as the alfalfa is likely to be injured if cut low.

CORN MEAL IN THE DIET.

Cheap Compared with Other Cereals—Has High Nutritive Value—May Be Served in Many Ways.

One way to reduce the cost of food for the family, say the specialists of the United States Department of Agriculture, is to use more corn meal, where this is low in price as compared with other cereals. Corn meal at present prices, when bought at retail stores, costs about half as much per pound as wheat flour, one-third as much as rolled oats, one-fourth as much as rolled wheat, and about half as much as broken rice. That is, it costs much less per pound than any of the other popular cereal foods, yet even the bolted corn meal usually sold, from which the germ of the grain has been removed to make the meal keep longer, has a food value which compares favorably with that of wheat flour. It does not supply quite so much protein or mineral matter for building the tissues of the body, but, on the other hand, it gives more fat and starch, pound for pound, and its value as fuel for the body is fully as high.

The old-fashioned unbolted corn meal made from the whole grain, which can often be obtained by the farmer who will take his grain to mill, and can often be purchased in shops and markets, contains more of the tissue-building material and has what many consider even a better flavor than the bolted meal and is much liked for making some forms of corn bread.

Any family in town or country can have the best of corn meal by grinding it at home in a hand gristmill. The city man can buy corn by the bushel at a grain store. He can grind it coarse or fine, to suit the taste of the family, and in quantities to last a day or a week, or longer. Most people will agree that this meal containing the germ is very palatable and compares well in this respect with that ordinarily purchased ready ground. Prices of hand mills of substantial make run from $2.50 to $5. A small mill can be had for as little as $1.50, though this probably would prove too tedious to use, except for small quantities.

Whether obtained at the retail store, brought from a mill, or ground at home, corn meal can be used in several ways to give inexpensive variety to the diet.

A dish of mush and milk has made the greater part of many a supper on the farm, and children thrive on it, though they may rebel at cleaning the kettle and the "pudding spoon" afterwards, if the old-time methods of cooking it are followed. It is a simple dish to make—just 3½ cups of water and a teaspoon of salt to every cup of meal. The water can be put in cold and the vessel heated gradually. A double boiler is very convenient in cooking corn-meal mush, as well as all other cereals, and is easier to clean. The great secret of good mush is long slow cooking—the longer the better. A fireless cooker, in which the cooking can go on all day or all night, is very useful for this purpose.

For "quick action" in getting breakfast in the city flat, the corn meal and salt may be put in the double boiler, mixed with a little cold water, and then hot water may be added up to the required amount. If clean hot water is to be had from the spigot, a good corn-meal mush can be made in three-quarters of an hour. But corn meal can hardly be cooked properly in less time.

Corn-meal mush can be used in many other ways besides as a breakfast or supper dish. Fried mush, mush with fruit, and mush with cheese are in the list of recipes. Fish cakes with corn meal are good, and corn meal and meat of different kinds may be cooked together, "scrapple" being a favorite in some parts of the country.

Corn bread and corn griddle cakes are made in many ways, all good. Bread may be made of wheat flour and corn meal, half-and-half. Puddings and even doughnuts and cakes are made with corn meal as the basis.

Recipes for using corn meal in all these ways and others may be had from the United States Department of Agriculture upon request.

TIPS ON GARDENING.

When to Plant Vegetables in the Home Garden—Soil Requirements.

The garden specialists of the United States Department of Agriculture divide vegetables into two classes—"warm temperature" and "cold temperature" vegetables. When peach and plum trees are in blossom, they say, it is time to sow in the open ground such seeds as lettuce, radish, parsley, beets, turnips, cabbage, carrots, peas, and onions. The wrinkled peas should not be planted until later, as they are more liable to rot in cool ground than are the smooth varieties. When the apple trees bloom, it is time to plant the heat-loving vegetables, such as cucumbers, beans, sweet corn, pumpkin, and squash. This is an old but excellent rule.

The quickest crop to mature is the radish. Lettuce, turnips, peas, beets, and beans usually require from 6 to 9 weeks, corn from 11 to 13 weeks, and potatoes from 15 to 16 weeks to mature.

Lettuce is to the garden what the hay crop is to the field—always needed, and gives some of the best returns. A rich sandy loam with sufficient nitrate to stimulate leaf growth and intensify the chlorophyll or deep leaf color of the plant, and a sufficiency of soft water keep the crop crisp and fresh. Much the same plan is practiced with cabbage, except that it does not require so much water.

Beans do not require very rich soil and it is safe to plant them on the very poorest patch. Snap beans may be grown in rows between the orchard trees.

The Lima bean requires a rich, moist soil, but does not seem to deprive the land of its productiveness. Lima beans have been grown on the same fields in California for many years.

Cucumbers, squashes, and melons require rich soil, and the cucumber profits by the application of fresh horse manure. Sheep manure will hurry plants along more rapidly than most chemical fertilizers.

The specialists believe that if the general principles they have outlined are followed, it will be profitable for almost anyone to plant his idle acres this season. They point out that even where the monetary value of the crops raised in the back-yard garden is not important, the gardener and his family must credit to the patch the health and enjoyment they gain from this outdoor occupation. They point out that from the community point of view it is the duty of every home owner to keep his place orderly and attractive. The most profitable way of getting rid of a patch of weeds in the back yard is to cultivate it and plant it to some valuable crop, the orderly character of which will add much to the comeliness of the home grounds.

Gardening is an old, old story. It is related that nearly 20 centuries ago Pliny the Elder summed it up in a sentence of just six words: "Dig deep; manure well; work often."

If there is some doubt as to the necessity for liming for alfalfa the most practical and satisfactory way to determine this point is to sow a small field to alfalfa, liberally liming a part of it, and leaving a part unlimed. The growth of alfalfa in the two parts will be a good test of the need for lime.

The more rapidly carrots are boiled the smaller is the amount of nutrients extracted and the loss in weight. Even less material is lost when the carrots are cooked by steaming. This probably is true also of parsnips and other succulent roots.—Office of Home Economics, United States Department of Agriculture.

Oil mills on the Pacific coast have been operating for several years with soy beans imported from Manchuria and have found a ready sale in that region for the oil, cake, and other products.

BROODING CHICKENS.

Recommendations of Department's Poultry Specialists for Care of Hen and Young Chickens.

The proper brooding of chickens is one of the most difficult operations on many poultry farms, especially for the beginner. Many poultry keepers who are able to obtain good egg yields and fair hatches make a failure of brooding chickens, either in raising only a small percentage of the chickens hatched or in failing to rear strong, vigorous birds which develop into good breeding stock. Brooding is still in the experimental stage, and no one system has given perfect satisfaction. The poultry specialists of the United States Department of Agriculture advise the following procedure:

Rearing Chickens with Hens.

Sitting hens should be confined to slightly darkened nests at hatching time and not disturbed unless they step on or pick their chickens when hatching, in which case the chickens should be removed as soon as dry, in a basket lined with flannel or some other warm material, and kept near a fire until all the eggs are hatched; or the eggs may be removed and placed under a quieter hen whose eggs are hatching at the same time.

An incubator may also be used to keep the earliest hatched chickens warm, in case they are removed from the nest. If the eggs hatch unevenly, those which are slow in hatching may be placed under other hens, as hens often get restless after a part of the chickens are out, allowing the remaining eggs to become cooled at the very time when steady heat is necessary. Remove the eggshells and any eggs which have not hatched as soon as the hatching is over. Hens should be fed as soon as possible after the eggs are hatched, as feeding tends to keep them quiet; otherwise many hens will leave the nest. In most cases it is best that the hen remain on the nest and brood the chickens for at least 24 hours after the hatching is over.

Powder the hen with a good insect powder before moving her and the chickens to the brood coop. The hen should be dusted every two weeks, or as often as necessary, until the chickens are weaned. If lice become thick on the chickens, or if they are troubled with "head lice," a very little grease, such as lard or vaseline, may be applied with the fingers on the head, neck, under the wings, and around the vent. Great care should be taken, however, not to get too much grease on the chickens, as it will stop their growth and in some cases may prove fatal.

The brood coop should be cleaned at least once a week and kept free from mites. If mites are found in the coop, it should be thoroughly cleaned and sprayed with kerosene oil or crude petroleum. From 1 to 2 inches of sand or dry dirt or a thin layer of straw or fine hay should be spread on the floor of the coop. Brood coops should be moved weekly to fresh ground, preferably where there is new grass. Shade is very essential in rearing chickens, especially during warm weather; therefore, the coops should be placed in the shade whenever possible. A cornfield makes fine range for young chickens, as owing to cultivation of the ground they get many bugs and worms and have fresh soil to run on most of the time and enjoy abundant shade.

All the chickens should be toe-punched or marked before they are transferred to the brooder or brood coop, so that their ages and breeding readily can be determined after they are matured. Farmers frequently keep old hens on their farms and kill the younger hens and pullets, because they are unable to distinguish between them after the pullots have matured.

NOTICE TO CROP REPORTERS.

Meaning of the Term "Usual Acreage" as Used in Inquiries of the Bureau of Crop Estimates.

Correspondence with crop reporters indicates that many reporters are in doubt concerning the meaning of the expression "usual acreage" of a crop, or "usual number" of head of live stock.

The "usual" referred to in the bureau's inquiries, when applied to the acreage of a crop, means that acreage which will be planted in an ordinary year according to the customs of the neighborhood as regards rotation, etc., assuming that prices, season, and other conditions are average. Most agricultural communities have a fairly well established rotation of crops, and under ordinary conditions a certain percentage of the total acreage utilized will be devoted to certain crops year after year. Variations in this proportion will arise owing to peculiar weather conditions, to high or low prices for particular crops, or to new conditions arising which make the production of certain crops more or less profitable than formerly. The "usual" is not an absolutely fixed proportion, but may be considered as the average proportion over a period of the past three or five years, not ordinarily to be determined by actual records, but according to the experience and judgment of the reporter based upon his observation during recent years. The successive seasons tend to form in his mind a composite picture or impression upon which he must base his estimate as to whether the crop of the current year occupies a larger or smaller acreage than ordinarily, and what proportion more or less than usual as expressed in a percentage, 100 representing the "usual acreage."

Reporters should endeavor to guard against allowing the crop of the preceding year to influence too greatly their conception of what has constituted the "usual acreage," and likewise, in reporting concerning the acreage of the present year in comparison with the acreage last year, they should try to avoid allowing the crops of earlier years to affect their recollection of the acreage devoted to the particular crop last year.

FARMERS' FIRE INSURANCE.

Mutual Companies Effect Large Saving in the Cost of Fire Protection.

Farmers' mutual fire insurance companies have reached a place of great importance among the cooperative associations benefiting dwellers in the country and have an opportunity to perform still greater service, according to an article in the 1916 Yearbook of the United States Department of Agriculture. Nearly 2,000 such companies exist in the United States and carry a total amount of insurance exceeding $5,250,000,000 on property worth nearly $7,000,000,000. This is more than two-fifths of the value of all the insurable farm property in the 48 States.

The saving in the cost of insurance to farmers brought about through these farmers' mutual companies is very large, but definite figures of the aggregate saving are not available. The average cost per $100 of insurance for all the farmers' mutuals in 1914, however, was only 26 cents, and it is estimated that in a number of States where farmers' mutual insurance is most highly developed, the average cost of insurance for all such companies in the State has fallen well below one-half the commercial rates.

So far, it is pointed out, the efforts of the farmers' mutuals to achieve efficiency have been directed chiefly to a reduction of expenses of operation. It is possible, however, still further to decrease the charges to be met by a concerted campaign to reduce fires. More careful inspection should be practiced and risks should be classified so as to place a premium on safe construction and the adequate care of buildings.

One of the important effects which the success achieved by the farmers' mutual fire insurance companies has had on country life, in the belief of rural organization specialists of the department, is the encouragement of farmers to attempt other cooperative enterprises.

The green tops of young onions and leeks cooked as greens are excellent.

STOP FOOD WASTE.

Much of the $700,000,000 Annual Waste in Homes Caused by Careless Handling, Improper Cooking, etc.

GOOD FOOD IS WASTED—

If it gets into the garbage pail.
If allowed to spoil in the home.
If ruined by careless cooking.
By careless paring and trimming.
When too much is served at a meal.

Good food heedlessly thrown into garbage pails, food allowed to spoil in the household, food ruined by improper cooking, and food destroyed by rats, mice, and insects constitute the heavy items in the $700,000,000 annual waste of food in homes in this country cited recently by the Secretary of Agriculture. Seven hundred million dollars is considered to be a conservative figure. In household waste, of course, are not included the vast losses of food allowed under improper handling or inefficient marketing methods to spoil in transit or in the hands of producers or dealers.

Much of this $700,000,000 household waste of food, the dietary specialists of the United States Department of Agriculture declare, is easily preventable. This preventable waste consists in large part of the following items:

(1) *Edible food thrown into the garbage pail or into the kitchen sink.*—That vast amounts of nourishing material are thrown out from American kitchens and so made useless for human consumption, is well established by the returns from garbage and fertilizer plants showing the amount of fats and nitrogenous material recovered from city garbage.

Much of the food is thrown out, the specialists say, because so many people do not know how to utilize "left overs" or will not take the trouble to keep and prepare them. The specialists point out that left-over cereals can be reheated or combined with fruits, meats, or vegetables into appetizing side dishes; that even a spoonful of cereal is worth saving as a thickener of soups, gravies, and sauces. Stale bread can be utilized in a variety of ways in combination with vegetables and meats and in preparing hot breads and puddings. Skim milk, too widely looked down upon as a food, although it contains practically all the nourishing elements of whole milk with the exception of the cream or fat, can be used as a beverage, in cooking cereals, or as a basis for milk soups or sauces. Even sour milk, so largely thrown away, can be used in making hot breads or in the home manufacture of cottage cheese.

Every scrap of meat or fish can be combined with cereals or other foods lacking in pronounced flavor, both to give flavor and to add nourishment to made-over dishes. Every bit of fat or suet trimmed from meat before cooking or tried out in boiling, roasting, or broiling can be made useful in cooking. Many butchers, after they have weighed meat and named the price for the cut, trim off valuable suet and fat. This fat, which the housewife pays for, if taken home and used, would reduce expenditures for prepared cooking fats. Water used in cooking rice and many of the vegetables contains nutrients and desirable flavoring materials valuable in soups or sauces. Too often fats and such water are poured into the sink.

Many persons regard the saving of small amounts of left-over food as unimportant. If, they kept accurate account, however, for any period, the specialists say, many families would be astounded by the amount of good food they are throwing out and by the sums that they are paying to the grocer, the butcher, and milkman merely to replace good food being absolutely wasted.

(2) *Spoilage of food due to careless handling and storing in the home.*—Important amounts of perishable foods are made dangerous or inedible in households because they are exposed unnecessarily to heat, germs, dust, dirt, or to flies and other insects.

Much milk spoils quickly because it is kept uncovered in warm kitchens. Close observance of the doctrine "Keep perishable food, especially milk, cool, clean, and covered continuously" may make a striking difference in the food bills of many families.

In other cases, one or two vegetables, beets or carrots, for instance, not needed immediately are thrown out or allowed to spoil instead of being used in soups or combination dishes. Fruits which could be stewed and kept are allowed to spoil. Vegetables and fruits in quantities often are stored in hot, damp, and poorly ventilated bins and under conditions which hasten wilting, fermentation, and decay. Fruits, surplus beans, tomatoes, and other vegetables produced in home gardens are allowed to spoil on the vines or rot on the ground. A morning's work would can and preserve such surplusage for use when fruits and vegetables are scarce and high in price.

Much food is ruined by being stored where flies or other insects or rats and mice can get at it. Much cereal food is ruined because it is not protected against weevils or other insects.

(3) *Food spoiled by careless cooking.*—Many housewives who complain that children and adults will not eat breakfast cereals fail to realize that the cereals they serve are undercooked, scorched, or improperly seasoned, and thus made unpalatable. Most of the cheaper foods require careful seasoning and preparation to be fully appetizing. In many households, the specialists believe, proper attention to the cooking of these cheap and desirable foods will increase greatly their consumption and thus reduce considerably the use of more expensive foods eaten instead of cereals.

Vegetables properly prepared tempt the appetite. When they are served in soggy form or in watery or poorly flavored dishes, much of them will be left on the table. The nutritive value and flavor of meat or fish can be lessened by overcooking or improper cooking. If fats are allowed to burn even a little, they develop unpleasant flavors and usually cause people to refuse gravies and sauces made with them or foods fried in them; burned meat is also disagreeable, as are burned vegetables.

(4) *Waste in preparation.*—Much useful food gets into the garbage pail because the housewife in preparing potatoes or other vegetables and fruit, such as apples, cuts off with the skin a considerable percentage of edible material. Careless paring of potatoes may consign as much as 20 per cent of the edible portion, including outer layers containing valuable mineral substances, to the garbage pail. Many persons are unaware that the green and tender tops of many vegetables which contain valuable mineral and other food substances, are excellent cooked as greens, or even as additions to salads.

(5) *Overgenerous serving of food.*—Many families take pride in serving lavish and overbountiful meals. Such meals lead inevitably to waste of food on the table and to overeating, which often impairs health and efficiency. The sane standard, "Eat enough food and no more," rigidly followed, would reduce greatly food bills in many homes and, at the same time, tend to improve the physical condition of all members of the household.

Eat for Efficiency.

Housewives interested in economy who wish to be certain that their families are getting proper food and not too much, should ask the United States Department of Agriculture to send Farmers' Bulletin 808, "How to Select Foods—What the Body Needs." This bulletin classifies foods into simple household groups and shows the housewife how to plan meals that will provide for the growth and repair of the body and supply the energy the various members of the household need for their special tasks.

It is often said that celery is a nerve food, but there seems to be no warrant for such a statement; the belief is probably a survival of the time when specific virtues were attributed to almost all plants and vegetables.—Bulletin United States Department of Agriculture.

SOY BEANS AS FOOD.

Cheap and Nourishing—Important Substitute for Other Materials Furnishing Protein and Fat.

Soy beans, introduced into the United States more than a hundred years ago primarily for use as a forage crop, are in reality one of the most nutritious of the legumes when used as human food, according to specialists of the United States Department of Agriculture. These beans have been used for centuries as a staple article of diet in China and Japan and are coming to be used more generally in this country as consumers learn their food value and palatability. Since they furnish protein which contains nitrogen for muscle building and valuable fat, they are especially important to turn to as an emergency addition to the usual dietary or as substitutes for other foods furnishing protein and fat. Moreover, the fact that they contain no starch makes them valuable for invalids who can not eat starchy foods. These beans may be grown easily in practically all sections of the country where corn is grown and give heavier yields than most other beans.

Soy beans have been so important for other purposes that until recently they have attracted little attention for food purposes in this country. They are now coming into their own for that purpose, however, and the acreage of soy beans has increased steadily in recent years. The dried beans may be purchased now in a number of markets in various parts of the country, often under the name of togo beans, and should, with the increased acreage of the coming season, be more generally available. Soybean meal, a by-product of oil making, is a valuable food and no doubt will come into more general use with the increased production of soy beans.

Where dried soy beans are available, they may be baked with or without pork like navy and other beans. They should be soaked overnight and should be cooked longer than other kinds of beans. The cooking may be done economically in a fireless cooker of the sort provided with heating stones or plates; or on the ledge of the fire box, inside the furnace, if the house happens to be heated with one of this type.

Dried soy beans have been canned in considerable quantities during the past season, baked with pork, and are on sale in this form in numerous markets. Canned green soy beans, which may be compared with Lima beans, also are on the market in some sections of the country. Both these canned products yield as high a proportion of energy and a higher proportion of protein than the canned beans with which they are most closely comparable, and so are more nourishing. Both are produced and handled usually at a lower cost than other beans and should therefore be obtainable at lower prices.

COLOR OF APPLES AND TOMATOES.

The value of color as a guide to the picker in determining the time for gathering apples and tomatoes is pointed out in an article in the 1916 Yearbook of the United States Department of Agriculture. The economic result of placing immature apples in storage, says the author, Prof. L. C. Corbett, is loss of color; loss in color also occurs when the immature tomatoes are processed. In both cases the product is made less attractive and brings, therefore, lower prices.

Immature apples picked when some of the leaf green is still present on the shaded side of the fruit develop in storage the baked apple appearance characteristic of scalded fruit. This occurs even when the temperature conditions are ideal for properly ripened specimens of the variety. Scalded fruit is not attractive to the average customer.

In the case of tomatoes intended for canning or catsup, only mature fruit will yield a product of the deep-red color so much prized by the market. Ripened tomatoes of the proper varieties will, when properly handled, produce a high-colored canned product or a high-colored catsup. On the other hand, half-ripened red tomatoes will yield a product varying from straw color through the shades of red. The producer, however, should bear in mind that with many varieties the green color persists to some extent until the fruit is too dead ripe to be marketed without risk of decay. Soundness, of course, should never be sacrificed to obtain the desired color.

The practical grower, the article points out, will do well to familiarize himself with the color of his mature products and take pains to pick them at the proper time if he desires to place on the market articles with the most prepossessing appearance.

Though most commonly eaten raw, radishes, especially the larger sorts, are also cooked and served like creamed turnip, which they much resemble in flavor. The leaves can be used for greens, or if they are very tender can be added to salads.—United States Department of Agriculture.

The young and tender seed pods of some varieties of radishes are sometimes used for pickling like capers; in fact, the Madras or rat-tail radish is grown exclusively for its pods, which are eaten cooked and also used in pickle making.—United States Department of Agriculture.

VEGETABLE PLANTING.

When to Plant Different Groups of Vegetables to Get Earliest Possible Crops.

Many home gardeners are asking the specialists of the United States Department of Agriculture whether it is safe to plant any vegetables in the open ground while there is still some likelihood of light frosts. To aid these home gardeners the specialists have worked out the following grouping of common vegetables according to their ability, if planted in the open, to withstand spring frosts. These directions, of course, do not apply to the planting of seeds in hotbeds or seed boxes to secure plants which afterwards are to be transplanted.

Group 1.—Plants not injured by a light frost. These may be planted as soon as heavy frosts are over or usually as soon as the soil can be put in good condition: Cabbage, Irish potatoes, early peas (smooth types as distinguished from wrinkled), onion sets, and salad crops, such as kale, spinach, and mustard. At the same time start in seed boxes in the house or in hotbeds tomatoes, eggplant, peppers, and cauliflower.

Group 2.—Vegetables which should be planted only after danger of hard frost is over: Lettuce, radishes, parsnips, carrots, beets, wrinkled peas, and early sweet corn.

Group 3.—These should be planted after all danger of frost is past: String beans and sweet corn (late varieties). A few early tomato plants may also be set out, but care should be taken to protect them from any sudden chilly weather, by providing a shelter of newspapers, boxes, etc.

Group 4.—This group should not be planted until all danger of frost is past and the ground has begun to warm up. Included in this would be cucumbers, melons, squashes, pumpkins, Lima beans, tomatoes, eggplant, and peppers. Plants of tomatoes, eggplant, and peppers which have been grown in boxes or hotbeds should be ready to set in the open at this time.

In order to insure a steady supply of vegetables, crops like peas, beans, and lettuce may be planted every three or four weeks, whenever the space is available. Some of these can be planted in the spaces made available by removing the other crops.

If your garden is small, do not attempt to grow potatoes or late sweet corn. It is better, the specialists say, to select half a dozen crops which the family likes than to grow 15 or 20. If the size of your plot is less than 40 by 100 feet, or 4,000 square feet, it usually is not advisable to grow late potatoes or late varieties of sweet corn. It might be well to devote a small section to an early variety of sweet corn, such as the Golden Bantam, and to plant a row or two of early potatoes.

HELP FEED YOURSELF

Make Home Gardens and Back Yards Productive

MAKE EVERY SQUARE YARD OF FERTILE, SUNNY SOIL PRODUCE FOOD FOR YOUR FAMILY.

Make your ground work for you and the Nation. Idle ground is waste; this is no time for waste or idleness.

IF YOU CAN'T RAISE ALL YOUR OWN VEGETABLES, AT LEAST RAISE SOME.

All idle ground utilized in the production of vegetables means more food for those who have no ground at all.

You can raise some vegetables for your family, no matter how small a piece of ground you have

Somebody Has to Raise Everything You Eat—Do Your Share

KEEP YOUR SOIL WORKING ALL SEASON.

1. Keep your garden working all season. Hasten early crops by starting seed in boxes in the house, in hotbeds and cold frames if the weather prevents outdoor planting.
2. Get your ground ready for planting as soon as the soil is dry enough to work.
3. Plant for early crops as soon as the weather permits. Make successive plantings of lettuce, radishes, beans, and other short-season crops.
4. Start new crops between the rows of plants that are soon to be removed.
5. As fast as the ground is cleared of one crop start a new crop.
6. See that your garden toward fall is full of potatoes, beets, turnips, cabbage, and other staple foods that can be stored for the winter.

YOUR CHILDREN, TOO, CAN HELP.

Boys and girls can help to make the soil in your gardens, back yards, and vacant lots produce food for the family. Last year they raised in their gardens and helped to can more than 4,000,000 packages of valuable food.

SAVE ALL SURPLUS FRUITS AND VEGETABLES.

If your garden at any time produces more than you can use immediately, do not allow the surplus to spoil.

Can surplus beans, peas, corn, tomatoes, beets, spinach, pumpkin, and squash for winter use.

Can or preserve apples, peaches, pears, cherries, quinces, berries, and other cultivated and wild fruits.

Every can of vegetables or fruit and every jar of preserved food means that you have saved food materials that would have otherwise been wasted.

Can or store root crops, cabbage, and other vegetables properly so that they will keep well and supply you with food when the garden ceases to produce.

LEARN HOW TO GROW AND CAN VEGETABLES.

The U. S. Department of Agriculture or your State agricultural college or county agent will give you explicit directions for raising vegetables, and will tell you simple methods for canning vegetables and fruit at home with ordinary home utensils.

DEMONSTRATE THRIFT IN YOUR HOME

MAKE SAVING, RATHER THAN SPENDING, YOUR SOCIAL STANDARD

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., APRIL 18, 1917. No. 37

FOOD CROPS MUST BE INCREASED.

War Demands and World Food Shortage Should be Met by American Farmers—Efficient Production Imperative—What Crops Should be Stressed and Where.

The Secretary of Agriculture, D. F. Houston, on Saturday, April 7, issued the following statement:

The importance to the Nation of a generously adequate food supply for the coming year can not be overemphasized in view of the economic problems which may arise as a result of the entrance of the United States into the war. Every effort should be made to produce more crops than are needed for our own requirements. Many millions of people across the seas, as well as our own people, must rely in large part upon the products of our fields and ranges. This situation will continue to exist even though hostilities should end unexpectedly soon, since European production can not be restored immediately to its normal basis. Recognition of the fact that the world at large, as well as our own consumers, must rely more strongly on American farmers this year than ever before should encourage them to strive to the utmost to meet these urgent needs.

Increase Yields of Staple Crops.

It is obvious that the greatest and most important service that is required of our agriculture under existing conditions is an enlarged production of the staple food crops. Because of the shortage of such crops practically throughout the world there is no risk in the near future of excessive production, such as sometimes has resulted in unremunerative prices to producers. This is particularly true of the cereals and of peas, beans, cowpeas, soy beans, and buckwheat. In view of the world scarcity of food, there is hardly a possibility that the production of these crops by the farmers of the United States can be too great this year, and there is abundant reason to expect generous price returns for all available surplus.

The most effective step that may be taken to increase the production of these crops is to enlarge the acreage devoted to them in the regions where they are grown habitually. This expansion of acreage should be to the limit permitted by available good seed, labor, and equipment. The placing of too great emphasis on production in new regions is inadvisable, since the introduction into a farm operation of a crop not usually grown frequently involves practical difficulties not easily foreseen nor quickly surmountable.

Taking the winter-wheat territory as a whole, winter killing has occurred to an extent very much greater than usual. This obviously, if not compensated for in some way, will mean a material reduction in the supplies of our most important bread cereal. Where winter wheat has been damaged sufficiently to justify the abandonment of fields, it should by all means be replaced by spring-planted food crops, preferably small grains or corn. The acreage of winter wheat seeded last fall is estimated at 40,080,000, or only 2 per cent above that of the preceding year (39,203,000 acres), and about one-eighth more than the average for the preceding five-year period (35,724,000). The condition of this crop, as shown by the department in its report of April 7, is more than 25 per cent below the average condition April 1 for the past 10 years. This condition forecasts a production this year nearly 52,000,000 bushels less than that of 1916 and 243,000,000 bushels less than the crop of 1915.

Climatic requirements of spring wheat during the last few weeks of its growth render it a more risky crop than others to plant outside the areas in which its production has been proved to be successful, so that it is not recommended for regions where oats or corn will be more certain to produce satisfactory yields. In the northern spring-wheat States, however, where old ground has been reserved for flax, and seed wheat is available, flax ground may well be sown with spring wheat and new land broken for flax where such land is available. In the Pacific Northwest, where the seed supply of well-adapted varieties is adequate, a considerably increased acreage of spring wheat appears probable. The spring-wheat acreage of 1916 (17,956,000 acres) was more than 5 per cent less than that of 1915 (19,161,000 acres), and more than 4 per cent less than the preceding five-year average (18,799,000 acres).

Good Seed Wheat Necessary.

The minimum quality of seed grain that should be relied upon under existing conditions is a very difficult point to decide. In general, it is not wise to risk planting seed wheat showing less than 75 or 80 per cent germination, nor that weighing less than 50 pounds to the bushel. If the land is prepared thoroughly and otherwise is suitable, the use of spring wheat weighing as low as 45 pounds per bushel, if it shows good germination, may be advisable where better seed is lacking.

The Usefulness of Oats and Barley.

If land intended for spring wheat can not be put into good condition early enough for seeding, oats or barley can be substituted to good advantage in the sections where these crops are known to do well. Barley can be relied on in the proved areas of Wisconsin, Minnesota, Iowa, the Dakotas, and Montana, while oats have a much wider range. The ease with which barley may be substituted directly for wheat in human food and its usefulness to replace wheat milling by-products as food in the production of the milk supply, renders its abundant production important. Barley, where it succeeds, yields a larger weight of feed per acre than any other small grain crop. With an abundance of oats and barley available, much closer milling of wheat than at present could be practiced, if necessary, without endangering the milk supply which constitutes so important an element in the dietary of consumers.

Large Acreage of Rye Planted.

The place of rye under present conditions is an important one. The crop this year should be harvested and utilized with more than the usual care. Considerable acreage is planted in some sections for plowing under in the spring for green manure. Where conditions are suitable part of this acreage might well be held for harvesting, and followed with a suitable summer or fall crop for plowing in later.

Buckwheat for Late Planting.

Buckwheat may be planted later than any similar crop, and often does well on old meadows or waste land that can be broken after the more exacting crops are planted. In some sections where experience has demonstrated that the cereals, except rye, can not be relied on, buckwheat is a crop of considerable importance. The acreage could well be increased, especially in portions of New York, Pennsylvania, and New England, where the crop now is grown to a considerable extent.

Rice Gaining in Popularity.

Rice at present prices provides more food value for the money than most of the other cereals. Fuller appreciation of its value should stimulate production quickly in Louisiana, Texas, Arkansas, and California to an extent that would increase the total food supply greatly.

Increased Acreage of Grain Sorghums Warranted.

The prices of the grain sorghums during the past season appear to warrant increase of acreage of these grains in the regions where they can succeed, as in western Kansas, Oklahoma, and northern Texas. This increase should be practically to the limit of the acreage that can be handled properly

with the labor and facilities available. Grain sorghums may well be used in that area to replace winter wheat on fields abandoned because of winter injury. The grain sorghums are but little known to eastern farmers, but are assuming importance rapidly in the drier portions of the country where corn and the small grains are unreliable because of frequent insufficiency of moisture. In the past these grains have been used chiefly as poultry and stock feed, but they have possibilities also as human food.

Flax for New Ground.

Though flax is not primarily a food crop, the cake remaining when oil is expressed from the seed constitutes an important element in the dairy food supply. Its increase use in this way would release other grain products for use as food. As a crop peculiarly adapted to newly broken land in the spring wheat States where it is chiefly grown, the acreage of flax should be increased to the greatest extent possible.

Expand the Corn Acreage.

Corn is the leading food and feed crop of the United States in geographic range of production, acreage, and quantity of product. The vital importance of a large acreage of this crop properly cared for, therefore, is obvious. Because of the prices obtained for the last crop and the world demand for this grain, its profitableness to the American farmer during the approaching season is clear. The 105,954,000 acres planted to corn in 1916 yielded 2,583,000,000 bushels or more than 400,000,000 bushels less than the large crop of 1915—2,994,793,000 bushels—and considerably less than the five-year average—2,732,457,000 bushels. Conditions now warrant the planting of the largest acreage of this crop which it is possible to handle effectively.

Although fall is the proper time for breaking sod for corn, there are many unproductive and foul meadows and indifferent pastures in Illinois, Indiana, Ohio, and the Middle Atlantic and Northeastern States that under existing conditions can be broken now to advantage and planted to corn. The resulting reduction of hay and pasture would be more than replaced by the corn stover, ensilage, and grain produced. Corn as a cultivated crop has been found well suited to replace summer-fallowing in portions of Washington, Idaho, Oregon, Wyoming, and Montana, the forage and grain produced not materially reducing the succeeding grain crop.

Plant Early and Reduce Risk.

Earliness of maturity, other factors being equal, is advantageous in the case of practically all grain crops. Relatively early maturing varieties should be selected where possible, and the planting should be done at the earliest suitable date. With the small grains an advance of three or four days in stage of maturity frequently saves a crop from serious damage by rust. With corn a similar advantage is obtained by early maturity when severe droughts are encountered and when killing frosts occur toward the end of the season. Corn grown on the rich bottoms which constitute the best corn lands often is damaged by temporary overflow. If corn has an early start, however, it usually will attain a size which will make it possible to withstand overflows with less damage. Early plantings of corn if somewhat damaged by flood or frost can be replanted even a second or third time with profit, if seed of early maturing varieties is secured in advance of the time when needed.

Cowpeas and Soy Beans Valuable for Food.

The usefulness of cowpeas and soy beans as human food has been recognized only recently in this country. Existing conditions warrant the planting of all the available seed of varieties known to do well in the several sections. The soy bean, in particular, has proved sufficiently resistant to cold in spring and to adverse weather during summer to warrant heavy planting, especially throughout the South. The value of the beans for oil production, as well as for human food, has become recognized so quickly and so generally during the past year that the crop has acquired a commercial standing far in excess of its previous status. While the commercial supply of seed late in March was estimated not to exceed 500,000 bushels, the quantity available on farms, where home-grown seed is held over in small lots for planting, undoubtedly will make possible a largely increased acreage.

Field Bean Prices Should Stimulate Production.

The high food value of field beans and the shortage of supply due to the light yields of 1915 and 1916 render them of great importance in the regions to which they are adapted. This is especially the case in portions of the New England States, New York, Michigan, and California, where the chief supply has been grown for many years, and in sections of Idaho, Colorado, New Mexico, and other Western States where beans have attained importance recently. The seed supply, while high in price, is well distributed. In order that especially good crops may result, beans should be planted under such conditions of soil as regards character and preparation as will insure efficient use of the seed supply.

Reserve Sufficient Hay, Forage, and Pasture Land.

A deficiency of hay and forage for the next winter would jeopardize the future meat and dairy supplies of the country and result in a shortage of roughage for military draft and saddle animals. In regions where dairying dominates, the full acreage of clover, alfalfa, and the grasses that is in productive condition should be maintained. Under the conditions prevailing in most dairying sections these crops can be carried with less man power than that required for tilled crops. The older, thinner, and less productive grass lands, however, frequently can be made to produce much larger yields of feed in corn than if left as they are in unproductive grass. The seeding down of small grain fields for next year's mowing should by no means be neglected, for the maintenance of effective rotations of crops will be found as important in the future as in the past.

For the Gulf States perhaps no forage crop of which the available seed supply is relatively abundant exceeds the velvet bean in potential value. This legume possesses also the ability to make a crop when planted relatively late.

Potatoes and Vegetables.

Seed potatoes should be conserved by planting on the best lands available for them and planning for thorough tillage and protection of the crop against disease and insect pests. Potatoes can be grown most advantageously near the centers of population in the Northern States where transportation cost may be reduced to a minimum. This crop is capable of quick and large increase of production when conditions are favorable. There is, however, considerable risk of unprofitable production of potatoes when they are grown at long distances from the consuming markets, owing to their disproportionate weight and bulk of the product in comparison with the cereals.

Such vegetable crops as carrots, rutabaga, turnips, onions, and cabbage are worthy of much more attention than they generally receive, especially in the eastern United States. All these crops are capable of large production on suitable land under intensive culture throughout the more densely populated portions of the country. The supply of seed is ample and their culture relatively simple. The holding of these vegetables for the winter food supply is relatively easy where suitable inexpensive pits, cellars, or lofts are prepared in time. The practicability of quickly drying vegetables for longer preservation was demonstrated on a large scale last year in western New York, where quantities were dried in the available apple evaporators and in quickly constructed dry kilns for export as army supplies. This was a repetition of the experience of the Civil War period, when desiccated vegetables assumed considerable importance in the army ration and the equipment required for their preparation proved the forerunner of our present fruit-drying equipment. Existing conditions warrant heavier planting than usual of staple winter vegetables in the sections where canneries and fruit evaporators exist and probably in some sections where the provision of such facilities later in the season may be justified.

In the southern half of the country perhaps no crop has larger possibilities for quick increase of production of food for both men and animals than the sweet potato. Methods of handling and storing this product demonstrated and advocated by the Department workers for several years make possible much fuller utilization of this crop than has occurred generally in the past.

The peanut in many sections of the South also is capable of greatly enlarged production with little risk of over supply, as it is in demand for oil and peanut butter manufacture as well as for direct use as food both for man and hogs.

Hold Seed for Replanting.

While early planting is desirable, it is rarely advisable to risk the entire supply of seed in the first planting. This is particularly important with the tender, tilled crops, including corn, sorghum, beans, cowpeas, and soy beans. It is well to hold a fair proportion of seed in reserve against possible need, due to untimely frost or other destructive weather, at least until after the recognized danger period is passed. The availability of seed for immediate use when the need occurs frequently determines the practicability of replanting effectively. This is true also of reserve stocks of plants of tomatoes, sweet potatoes, early cabbage, and other vegetables usually transplanted.

Possible Sweets for Domestic Production.

Only about 20 per cent of the supply of sugar normally consumed in the United

States is produced domestically, and this amount can not be increased appreciably during the coming season. Unless normal imports of sugar reach our shores, therefore, a shortage of this food is inevitable. Supplemental sweets, however, may be produced more abundantly than in normal years and to some extent may take the place of sugar for the home use of farmers. Sirups from cane and sorghum constitute one of the most important groups of supplemental sweets. Wherever these crops can be grown farmers may find it to their advantage to plant acreage sufficient to furnish materials for the home manufacture of at least a sufficient supply of sirup to meet family needs. In many parts of the country honey production may be increased by closer attention to bee culture.

Increase Farm Production of Vegetables, Poultry, and Dairy Products.

The high prices for foodstuffs that have prevailed during the last few months have stimulated interest in the increase of home supplies of vegetables, poultry, and dairy products on farms. This interest has been quickened most noticeably in the South, where for several years this department and the States through their extension workers have urged such an increase as necessary for economic reasons even under normal conditions. Other parts of the country have responded to these appeals, but emphasis on this feature should be continued by all agencies in position to operate effectively.

Through increased attention to poultry on farms it is possible to add quickly and materially to the food supply. Because of the importance of an increased supply of eggs, under present exigencies, farmers should not market hens of the egg breeds, such as the Leghorns, which are less than 3 years old, or of the larger breeds which are less than 2 years old. By the immediate preservation of eggs for home consumption through the use of water glass or limewater, larger supplies of fresh eggs may be made available for marketing later in the season, when production is less and prices higher. Every person who raises chickens, from the novice to the poultry husbandman, should see that infertile eggs are produced and all surplus marketed promptly so as to eliminate waste through spoilage.

Increase Production off the Farms.

When conditions render it feasible small flocks of poultry should be kept by families in villages, towns, and especially in the suburbs of large cities. The need for this extension of poultry raising is particularly great where consumption exceeds production, as in the Northeastern States. Through utilization of table waste, scraps, and other refuse as poultry feed, much wholesome food in the form of eggs and poultry for home use may be produced at relatively low cost. Many families in villages and on the outskirts of cities also should consider the advisability of keeping a pig if sanitary regulations permit. In most cases, however, it will be profitable to keep a pig only when a sufficient surplus from the household and the garden is available to furnish a considerable portion of the pig's food.

Consumers living in villages and in the suburbs of cities do not appreciate sufficiently the possibility of adding materially to their food supply by utilizing suitable idle soil in yards, vacant lots, and unused outlying fields. The total contribution to the food supply of families and communities which can be brought about through such activities is great. Gardening is peculiarly an activity in which the family and the community may share with resultant mutual helpfulness and benefit.

The duty of the individual farmer at this time is to increase his production, particularly of food crops. If he has control of tillable land not in use, or money lying idle, or labor unemployed, he should extend his operations so as to employ those resources to the fullest extent. This does not mean that he should rob his land, waste his capital, or expend his labor fruitlessly, but that by wise planning and earnest effort he should turn out a greater quantity of food crops than ever before. He will not lose by it; and he will perform an important service in supporting his country in the task that lies before it. The agricultural sufficiency of a nation is not attained unless the units which compose it are efficient. Those agricultural workers who produce, conserve, and market wisely will help toward the achievement of national agricultural sufficiency, and thus will perform valuable service for the Nation.

GIVE CORN AN EVEN CHANCE.

Pointers for the Corn Grower in the Northern Third of the United States.

Early fall frosts every few years cause enormous losses of corn in the northern third of the United States. Each September there is a feeling of fear that frosts may come 10 days earlier than usual and prevent the corn from ripening. Every fall millions of people are hoping that the first fall freeze will be delayed 10 days longer. This anxiety and this oft-recurring loss due to fall frosts can be largely prevented by earlier planting.

Concerning the ability of corn to withstand low temperatures, some work conducted during the past three years by the Office of Corn Investigations of the United States Department of Agriculture in Southern, Central, and Northern States, has brought out points of practical value. Points which can now be profitably applied in the northern third of the United States are:

1. Seed corn that matures properly and is thoroughly dried as soon as mature and kept dry will give a strong germination.

2. Seed corn of strong germination can be planted several weeks earlier than ordinary seed. Ordinary seed will rot where proper seed will not. Valuable points in connection with seed of strong germination are its ability to stand planting earlier, to utilize more fully the growing season, to mature earlier and to produce a larger and a better matured crop.

3. Very early planted corn makes slower growth above ground than late planted corn, is not so tender, and consequently not so badly injured by spring frosts.

4. In general, earliness of maturity means smallness in size and yield. It is a mistake to choose the earliest maturing varieties where a larger and more productive variety can be ripened by earlier planting.

With seed corn of strong germination (which is not as scarce as usual this spring) it is not advisable to wait until danger from frost is past before planting. The 10 days more of growing weather so anxiously needed in the fall can be secured by planting several weeks earlier than usual. With seed of strong germination, no fear need be felt because of cold soils or frosts. A good root growth will take place and the growth above ground will be so slow and hardy that it will withstand cold weather and frosts better than later planted corn.

Thick plantings should be made, so that although the weakest plants are killed by frosts and insects destroy some, a sufficient number of the most vigorous plants will remain to maintain a full stand. After planting, the soil surface should be kept dry and warm by frequent cultivations.

In the District of Columbia good stands have been obtained from plantings made in February where the ground froze several times after planting. In North Dakota good stands have been obtained from plantings made in April and in northern Ohio 100 bushels of mature shelled corn per acre have been produced by plants whose leaves were frozen off after the plants had attained a height of 12 to 18 inches.

It is the fall and not the spring frosts that should be feared.

Early planted corn matures earlier and usually yields better than later planted corn. Earlier planting will result in larger and better crops in the northern third of the United States and cause sufficiently early ripening to reduce the enormous losses which frequently occur through failure of the corn crop to mature before growth is stopped by frost.

C. P. Hartley,
In Charge of Corn Investigations.

When alfalfa is once started under favorable soil conditions, weeds, including perennial grasses, will likely prove its most dangerous enemy. This is one reason why sod land is not recommended for this crop. On account of the danger from weeds it is usually best to precede the alfalfa for one or two years with a clean-cultivated crop.

In 1909 the value of sugar beets per acre was exceeded by four other crops—hops, tobacco, sugar cane, and sweet potatoes. The acre value of beets was nearly four times the value of corn or wheat, and more than four times the average acre value of all cereals.

SOW GRAINS EARLY.

How Farmers in Northern Plains Area and Upper Mississippi Valley May Increase Production.

It now appears that the farmers of our country should make every effort this year to produce large crops of the spring-sown cereals. The food supply of our own people and the people of other countries needs to be safeguarded by the largest production of these crops the country has ever known. It is especially important that the supply of wheat should be large. In this connection the United States Department of Agriculture makes these suggestions to the farmers in the Northern Plains area and upper Mississippi Valley regarding the wheat, oats, and barley crops.

Early sowing of spring grains is very desirable. Wheat should be sown as soon as the land can be put in good condition. The seeding of oats should immediately follow the seeding of wheat, and then the seeding of barley should follow. Late-sown grain is more liable to injury by rust and by hot or dry weather.

Good Seed Bed Especially Important.

Good seed-bed preparation helps to insure high yields. Extra labor should be put on the seed bed and consideration should be given to planting increased acreage this year. The seed bed should consist of 2 or 3 inches of loose, mellow surface soil, and a firm subsoil. This should be secured by the most effective and economical method. Double disking may take the place of spring plowing east of the Red River Valley, but in the Great Plains plowing is preferable. Less seed is needed on well-prepared than on poorly-prepared land, as germination and growth are favored, and light-weight seed can then be used more safely, if necessary.

Heavy, plump, pure seed of the best varieties should be used so far as possible. Unless the seed is of the best quality it should be fanned and graded to remove foreign matter and shriveled or diseased kernels. Oats should generally be treated with formaldehyde for smut. Where shrunken seed must be used, the land should be specially well prepared.

The usual rate of seeding of wheat, oats, and barley should generally be followed, but on unusually well-prepared land this may be reduced 1 peck per acre.

Earliness and rust resistance are of great importance in wheat. Marquis and Fife are the best spring common wheats for the northern Great Plains. Bluestem is as good as these varieties east of the Red River Valley, but should not be grown farther west. Preston or "Velvet Chaff" is hardly as good a milling wheat as Marquis and Fife and does not yield as well except in eastern and central South Dakota and south-central Minnesota.

Durum-wheat seeding may be profitably increased, especially in the Dakotas and Montana. In most parts of these States durums are better yielders than the spring common wheats. The durums also are more resistant to rust and drought, and the quality of seed available this year in the Dakotas is better.

Oats.

The best varieties of oats to sow are those which are midseason in maturing, such as Silvermine, Green Russian, Siberian, Lincoln, and Swedish Select. These varieties almost always yield better than the late side oats, such as White Russian and White Tartarian. If a portion of the oat acreage must be sown late, early maturing varieties, such as Sixty-day and Kherson, are preferable if they are readily obtainable.

Barley.

In the Red River Valley and eastward, barleys of the Manchuria-Oderbrucker group should be sown. In western North Dakota the two-rowed varieties, preferably Hannchen or Svanhals, give larger returns than the six-rowed and should be used wherever seed can be obtained. In Montana White Smyrna, a two-rowed variety, is best adapted on the dry lands and should be used where available. In the absence of seed of White Smyrna, Coast barley is best adapted.

Patriotism on the Farm.

The farmers of the country have this year an unusual opportunity for the exhibition of patriotism by maintaining a food supply for an emergency. Its most effective expression in the spring wheat belt is through the production of large cereal crops. Early sowing, extra good seed-bed preparation, the use of seed of the best possible quality and variety, and extra care generally are means whereby this can be attained.

SPRING WHEAT AND BARLEY.

Farmers in Pacific Northwest Urged to Sow These Crops Early.

In the Pacific Northwest, as elsewhere, early sowing of spring wheat and barley is very desirable. This gives both crops more time to make their growth before the heat and drought of summer and allows the wheat to mature before it is badly injured by rust. The seed bed should be given the best possible preparation. This helps to insure a good crop. Seed is high priced this spring. If necessary to economize in the quantity of seed used, the land should be especially well prepared. The following suggestions are made by the cereal specialists of the United States Department of Agriculture:

Wheat.

The standard spring varieties of wheat in the Pacific Northwest are mostly white kerneled. Only well-known standard early varieties should be sown. Pacific Bluestem or White Australian, the most widely-grown spring variety, yields well and is of good quality. Early Baart is an equally good variety in both yield and quality. Defiance is the variety usually grown under irrigation. Colorado Special, a variety very similar to Defiance, is grown strictly as a dry-land wheat on the Rexburg bench in southeastern Idaho.

Of the club wheats, Little Club is widely grown, although it is later and sells at a lower price than Pacific Bluestem and Early Baart. Some hybrid clubs, developed by the Washington Experiment Station, are good spring wheats. They are treated as club wheats on the market, however. One of them, Hybrid No. 123, has red kernels.

Red Russian and Jenkin Club are grown under subhumid conditions and should not be used on the dry farms. Two varieties to be avoided entirely are Sonora, which is a shattering wheat of even poorer quality than the club wheat, and Early Wilbur, a poorly-bred hybrid.

Marquis wheat is a splendid variety in the northern Great Plains, but does not do as well west of the Rocky Mountains. It should be used only where spring wheat is to be sown in a thin stand, or partly winter-killed field of hard red winter wheat. When grown mixed in this way, Marquis and Turkey probably will sell at the price of Turkey.

Barley.

The varieties of barley recommended are Mariout, Hannchen, White Smyrna, and Coast. The last is the common barley of the section, and the only one of which seed can be obtained readily.

Beets, carrots, parsnips, salsify, turnips, and onions, the most common of the so-called succulent root crops, differ from starch-yielding vegetables like potatoes mainly in containing a larger proportion of water, 85 to 90 per cent on an average, and consequently a smaller proportion of nutritive material.—Office of Home Economics, United States Department of Agriculture.

As a hay crop alfalfa is to be preferred to red clover or cowpea hay wherever it can be successfully produced. It is somewhat superior to either clover or cowpeas in feeding value, while under favorable conditions the number of crops alfalfa produces in one season makes the total yield per acre greater than that of either of these crops.

TEST YOUR SEED CORN.

Germination Test a Cheap Form of Insurance on Labor and Land—How to Test Single Ears.

The subjection of seed corn to germination tests is a form of insurance which it is mere recklessness to neglect, say specialists in the United States Department of Agriculture. Weak seed make weak stalks and poor corn crops, and to plant it is to throw away labor and land. It is the *weak* seed rather than the *dead* seed that causes loss. Most farmers plant a superabundance of seed, and consequently their cornfields contain a superabundance of plants which are unproductive because seed was weak.

The process of obtaining good seed corn really should begin in the fall with the selection of the best ears from the field. If these are properly cared for through the winter, the farmer should have a satisfactory supply for planting in the spring. Whether or not this has been done, however, it will pay him to test his seed corn ear by ear.

A simple method of testing single ears is to select two kernels from the opposite sides of the ear on the top, two from the middle, and two from the butt. These are put in numbered squares or portions of germinating boxes, or other testers. If the kernels are kept moist in a room where the temperature is not above 90° F. nor below 50° F., the seeds should begin to sprout after a lapse of from six to seven days. If any of the kernels fail to give strong sprouts, the ear from which they are taken should be rejected for planting. If after testing a large number of typical ears the farmer finds that the results of the tests show a germination as high as 97 per cent of complete, he may be justified in considering that his seed supply is satisfactory and in omitting any further tests. Where there is any doubt, however, about the matter, it is much safer to test each ear the kernels of which it is proposed to plant.

If, as a result of these tests, the farmer finds that the corn he has intended to plant is unsatisfactory, he should take steps immediately to provide himself with a supply of good seed. This can best be obtained in the majority of cases from the immediate neighborhood. It is a great mistake for a farmer to obtain his seed from some section where conditions may be quite different from those under which he must grow his crop. For example, a farmer in Minnesota or North Dakota who goes to Iowa for his seed corn runs a great risk of having his crop fail to mature. Varieties which do well in a section where the growing season is long may not necessarily be at all suited to regions where the season is short. In buying seed corn, therefore, it is of the utmost importance to ascertain where the corn was grown.

As it may not always be possible to purchase seed corn from just the right section, it is by far the best agricultural practice for the farmer to select his own. Moreover, it happens not infrequently that conditions are such in one year that they interfere seriously with the production of good seed corn. For this reason it is the part of prudence for the farmer to save a supply of seed corn that will not only be sufficient for his planting the next spring, but will carry him through another year if the need arises.

OAT SEEDING IN CORN BELT.

For Maximum Yields, Sow as Early as Possible to Get Land in Good Condition.

To obtain the maximum yields of oats in the corn belt, seed should be sown as early as it is possible to get the land in good condition, according to the cereal specialists of the United States Department of Agriculture. Land which was in a cultivated crop last year should not be plowed, but should be disked and harrowed sufficiently to make a loose, mellow seed bed 2 or 3 inches deep. Oats do best on soil that is fairly firm below the surface 2 or 3 inches, hence spring plowing is not desirable, as there is not sufficient time for the soil to settle before seeding. Spring plowing also requires more time and is more expensive than disking.

The best seed that is obtainable should be sown. This seed should be treated for smut and should be thoroughly cleaned and graded. To obtain the largest yields seed should be sown with a drill, as it is more evenly distributed, is covered to a more uniform depth, and germinates more evenly. If sown with a drill in a well-prepared seed bed, from 2 to 2½ bushels to the acre is sufficient. Sowing more than that quantity is wasteful, as it does not increase the yield. If sown broadcast on poorly prepared land, the best rate is about 3 bushels to the acre.

In the central and southern portions of the corn belt, the best yields are obtained usually from early varieties, such as the Sixty-Day and Kherson. If seed of these varieties is available, it should be sown in preference to later varieties. In the northern portion of the corn belt midseason varieties, like Silvermine, Green Russian, and Siberian, should be sown.

C. W. Warburton,
Office of Cereal Investigations,
Bureau of Plant Industry,

The Japanese produce a "vegetable milk" from the soy bean. This milk is used fresh, in a condensed form, and as the basis for vegetable cheese.

TREAT GRAIN SEED.

Especially Important to Eradicate Bunt and Stinking Smut from Wheat, Oats, and Barley Seed.

One of the greatest losses in cereal cropping is caused by smut or bunt. At the same time several of the smut fungi are either entirely prevented, or at least largely controlled, by treatment of the seed. Therefore, in view of the unusual importance of preserving as far as possible all the cereal crops of the coming season, it is urged that close attention be given to the following instructions on seed treatment prepared by the cereal specialists, United States Department of Agriculture.

Preventing Bunt or Stinking Smut of Wheat.

Use seed of the best quality obtainable. Before subjecting the wheat to the fungicide bath, pass it through a fanning mill to remove light, imperfect kernels and any smut balls that may not have been blown out of the grain when threshed.

Following is an effective method of seed treatment: A tank about 6 feet long, 3 feet wide, and 18 inches deep, or some similar receptacle, should be filled a little more than half full of a solution consisting of one pint of formaldehyde to 40 gallons of water. Pour the grain in and stir with a hoe or shovel in order to bring to the surface any smut balls not removed by the fanning mill. After a bath lasting 10 to 15 minutes remove the grain from the tank, shovel into a pile, and cover with bags previously dipped in the solution. The seed may be sown within a few hours after treatment or it may be allowed to remain in the pile until the following morning. This treatment will cause considerable swelling of the kernels, and for this reason the drill or seeder should be set to allow for the seeding of a larger amount of seed per acre.

Where the seed wheat is known to be free from smut balls, it may be treated in the bag by putting not more than a bushel in each bag and tying these well toward the top in order to allow the grain more or less freedom of movement while in the bath.

Bluestone Treatment.

Certain growers use the copper sulphate or bluestone treatment for prevention of bunt. Under this treatment the seed wheat is subjected to a five or six minutes' bath in a solution consisting of 1 pound of bluestone to 4 or 5 gallons of water. The method of handling the grain while in the bath is like that described above for the formaldehyde treatment, except that the seed is dried as

(*Continued on page 11.*)

MILK AS A FOOD.

Furnishes Nourishing Material at Relatively Low Cost—Comparison with Other Foods.

Economy in the diet does not always depend upon limiting the use of certain foods, but sometimes it is a question of actually increasing the use of foods which furnish nutritive material at relatively low cost. Milk belongs to the latter class, and the housewife would do well to study its food value and decide whether her family is using as much as it should. The average person in this country uses only a little more than a half pint of milk daily, and this quantity can very profitably be increased when safe milk is available.

Many people think of milk only as a beverage, but if they understood that it is in reality a nourishing food they would increase their daily allowance.

We eat foods for two main reasons: First, to renew body wastes and promote growth by forming new tissues and fluids; and, second, to supply energy for carrying on body functions. Milk contains the body-building materials (protein and mineral substances, such as lime and phosphorus) and also supplies energy for carrying on the body functions.

The following table, compiled by specialists of the United States Department of Agriculture, shows the quantities of various foods needed to supply as much protein or energy as 1 quart of milk.

PROTEIN.	ENERGY.
1 quart of milk:	1 quart of milk:
7 ounces of sirloin steak.	11 ounces of sirloin steak.
6 ounces of round steak.	12 ounces of round steak.
4.3 eggs.	8½ eggs.
8.6 ounces of fowl.	10.7 ounces of fowl.

Another method of comparison is shown by the table below, in which the relative value of certain foods as economical sources of protein is given:

To supply protein at equal cost.

Milk at—	As cheap as—	
	Sirloin steak at—	Eggs at—
Cents a quart.	*Cents a pound.*	*Cents a dozen.*
7	16.3	17.6
8	18.6	20.1
9	21.0	22.6
10	23.3	25.1
12	27.9	30.2
15	34.9	37.7

According to this table, if milk is selling at 10 cents a quart sirloin steak must sell as low as 23.3 cents a pound and eggs at 25.1 cents a dozen to supply protein at equal cost.

To supply energy at equal cost.

Milk at—	As cheap as—	
	Sirloin steak at—	Eggs at—
Cents a quart.	*Cents a pound.*	*Cents a dozen.*
7	9.9	9.3
8	11.3	10.6
9	12.8	11.9
10	14.2	13.2
12	17.0	15.9
15	21.3	19.8

It can be seen, therefore, that milk, even at 15 cents a quart, is a cheap source of energy as compared with sirloin steak and eggs.

In comparing foods it is necessary to consider both the protein and the energy furnished. Neither one alone can properly be used as a basis of comparison, nor is there any correct way to reckon the value of a food by considering the total amount of nutritive elements.

It is very difficult to compare foods on the basis of the mineral matter they contain, but all physiologists agree that milk is extremely valuable from this standpoint. Indeed, it is the food prepared by nature, especially for growth and development of the young. A quart of milk a day is a good allowance for a young, growing child.

In addition to being an economical food, milk is usually easily digested and requires no cooking or other preparation for the table. Specialists of the department have found, also, that it is digested better when taken with other foods.

There are innumerable ways to use milk in cookery, such as in puddings, blancmange, soups, chowder, sauces, "junket," etc., and in all these ways it is both appetizing and nourishing.

PREPARING GARDEN SOIL.

How to Apply Fertilizers and Lime When the Ground is Ready for Cultivation.

A simple test to determine when garden soil is ready for plowing or working is to take a handful of earth from the surface and close the fingers tightly on it. If the earth compacted in this way is dry enough for cultivation, it will fall apart when the hand is opened. This test is applicable only to comparatively heavy soils, but it is these which receive the most injury if they are worked when wet. On such soils overzealous gardeners not only waste their time, but frequently do actual damage by attempting to work them too early.

After plowing or working with a spade, it is usually desirable to apply some form of fertilizer. Barnyard or stable manure, which furnishes both plant food and humus, is undoubtedly the best, and applications of from 20 to 30 tons to the acre are satisfactory. The manure should be distributed evenly over the surface and later worked in with a hoe and rake. Frequently, it is advisable also to apply commercial fertilizer, especially phosphate. An application of 300 to 600 pounds of acid phosphate to the acre is usually sufficient. In order to supply potash, if this is needed, unleached wood ashes may be distributed over the garden at the rate of 1,000 pounds to the acre. Wet, or leached ashes, have less fertilizer value. Two thousand pounds of these should be used. In order to start the plants early in the spring applications of 100 pounds to the acre of nitrate of soda are sometimes used. It is important, however, to remember that no form of commercial fertilizer will yield good results unless the soil is well supplied with humus. This frequently may be furnished in the form of sod or other vegetation which has overgrown a garden spot and may be turned under with a plow or spade.

In certain localities it is also advisable to test the soil for acidity. Naturally moist soils are likely to be sour and in such a condition are not likely to produce the most satisfactory crops. The test for acidity or sourness is a very simple one. A handful of the soil slightly moistened and a piece of blue litmus paper, which can be obtained from any drug store, are all that is necessary. When placed on sour soil the paper will turn red. To correct such a condition lime should be used. The ground should be covered with a thin coat of air-slaked lime and the latter worked in well. Lime will correct the acidity and will improve the physical condition of the soil.

The United States Weather Bureau in cooperation with the Bureau of Lighthouses, Department of Commerce, recently equipped a number of lightships with apparatus for recording weather conditions. These observations are then reported by wireless and are of service to the bureau in its preparation of storm and other warnings to ships at sea.

Factory-made butter in the United States increased from 627,145,865 pounds in 1909 to 786,013,489 pounds in 1914, and factory-made cheese increased from 311,175,730 pounds in 1909 to 377,506,109 pounds in 1914.

Tea made from sassafras root, once so common a beverage under the name of "saloop," is still used to some extent in parts of the United States, both in the home and commercially.

FEEDING YOUNG CHICKS.

More Harm in Overfeeding Than in Underfeeding—How to Prepare Mashes and Grain Mixtures.

Young chickens should be fed from three to five times daily, depending upon one's experience in feeding, say the poultry specialists of the United States Department of Agriculture. Undoubtedly chickens will grow faster when fed five times than when fed only three times daily, but it should be borne in mind that more harm can be done to the young chickens by overfeeding than by underfeeding. Young chickens should be fed not more than barely enough to satisfy their appetites and to keep them exercising, except at the evening or last meal, when they should be given all they will eat. Greater care must be exercised not to overfeed young chicks that are confined than those that have free range, as leg weakness is apt to result in those confined.

The young chicks may be fed any time after they are 36 to 48 hours old, whether they are with a hen or in a brooder. The first feed may contain either moistened hard-boiled eggs, johnnycake, stale bread, pinhead oatmeal, or rolled oats, which feeds or combinations may be used with good results. Mashes mixed with milk are of considerable value in giving the chickens a good start in life. The mixtures should be fed in a crumbly mash and not in a sloppy condition. Johnnycake composed of the following ingredients in the proportions named is a very good feed for young chicks: One dozen infertile eggs or 1 pound of sifted beef scrap to 10 pounds of corn meal; add enough milk to make a pasty mash, and 1 tablespoonful of baking soda, and bake until done. Dry bread crumbs may be mixed with hard-boiled eggs, making about one-fourth of the mixture eggs, or rolled oats may be used in place of the bread crumbs. Feed the bread crumbs, rolled oats, or johnnycake mixtures five times daily for the first week, then gradually substitute for one or two feeds of the mixture finely cracked grains of equal parts by weight of cracked wheat, finely cracked corn, and pinhead oatmeal or hulled oats, to which about 5 per cent of cracked peas or broken rice and 2 per cent of charcoal or millet or rape seed may be added. A commercial chick feed may be substituted if desired. The above ration can be fed until the chicks are 2 weeks old, when they should be placed on grain and a dry or wet mash mixture.

After the chicks are 10 days old a good growing mash, composed of 2 parts by weight of bran, 2 parts middlings, 1 part cornmeal, 1 part low-grade wheat flour or red-dog middlings, and 10 per cent sifted beef scrap, may be placed in a hopper and left before them all the time. The mash may be fed either wet or dry; if wet, only enough moisture (either milk or water) should be added to make the feed crumbly, but in no sense sloppy. When this growing mash or mixture is not used, a hopper containing bran should be accessible to the chickens at all times.

After the chickens are 2 months old they may be fed four times daily, with good results. After they are 3 months old three feedings a day are enough.

When one has only a few chickens, it is less trouble to purchase the prepared chick feeds, but where a considerable number are reared it is sometimes cheaper to buy the finely cracked grains and mix them together. Some chick feeds contain a large quantity of grit and may contain grains of poor quality, so that they should be carefully examined and guaranty as to quality secured before purchase.

As soon as the chickens will eat the whole wheat (usually in about 8 weeks), cracked corn, and other grains, the small-sized chick feed can be eliminated. In addition to the above feeds the chickens' growth can be hastened if they are given sour milk, skim milk, or buttermilk to drink. Growing chickens kept on a good range may be given all their feed in a hopper, mixing 2 parts by weight of cracked corn with 1 part of wheat, or equal parts of cracked corn, wheat, and oats in one hopper and the dry mash for chickens in another. The beef scrap may be left out of the dry mash and fed in a separate hopper, so that the chickens can eat all of this feed they desire. If the beef scrap is to be fed separately, it is advisable to wait until the chicks are 10 days old, although some poultrymen put the beef scrap before the young chickens at the start without bad results.

Chickens confined to small yards should always be supplied with green feed, such as lettuce, sprouted oats, alfalfa, or clover, but the best place to raise chickens successfully is on a good range where no extra green feed is required. Where the chickens are kept in small bare yards, fine charcoal, grit, and oyster shell should be kept before the chickens all of the time, and cracked or ground bone may be fed. The bone is not necessary for chickens that have a good range.

Alfalfa requires in the East a deep, fertile, well-drained, nonacid soil. Loam soils with open subsoils are best for alfalfa, but it may be grown on soils of almost any texture, from sandy or gravelly loams to heavy clays. The proportion of failures, however, is apt to be considerable on deep, porous sands or sands underlain by gravel. It is highly essential in any case that the soil be well supplied with decaying vegetable matter and plant food.

HOW TO SELECT FOODS.

Home Economics Specialists Offer Suggestions for Getting the Most Food for One's Money.

The following suggestions on getting the most food for one's money are from United States Department of Agriculture Farmers' Bulletin 808, "How to Select Foods."

Use cereals (flour, meal, cereal breakfast foods, etc.) freely, taking pains to prepare them with great care and to vary the kind used from day to day if necessary to keep people from tiring of them.

Remember that a quart of whole milk a day for each child, to be used as a beverage and in cookery, is not too much.

Plan carefully both in buying and in serving.

Do not be ashamed to plan closely. Thrift in food means providing enough food, neither too little nor too much.

Notice carefully how much of such staples as flour, sugar, milk, cooking fat, etc., is used each week for a month, and see if there are any ways of cutting down the quantity needed.

Buy nonperishable materials in quantities if better prices can be secured and there is a good storage place in the home. Neighbors can sometimes club together to get lower rates.

Estimate carefully how much of any material will be needed before laying in a supply, then see that none is wasted by careless handling.

Try to make the dishes served of such size that there will be enough to satisfy the appetite of the family and no unnecessary table and plate waste.

Do not be above noticing whether any thing usable is thrown away with the garbage, which always shows how thriftily food is used in a household.

Many inexpensive materials can be made attractive and the diet can be pleasantly varied by a wise use of different flavorings.

"Finicky" tastes in food often prevent the use of many valuable materials which might be the means of saving money.

Good food habits are an important part of personal hygiene and thrift. Children get such habits by having suitable amounts of suitable foods served to them and then being expected to eat what is set before them.

True economy lies not only in buying wisely but also in making the fullest possible use of what is bought.

Soy-bean flour can be used successfully in making muffins, bread, and biscuits much in the same way as corn meal is used.

PEACH SCAB CONTROL.

Injury to Commercial Peach Crop in Many Sections Can Be Successfully Combated by Spraying.

Peach scab, which ranks next to the destructive brown rot in economic importance among peach diseases in the United States and which at one time seriously menaced the success of commercial peach culture east of the Rocky Mountains, can be successfully controlled at small cost by spraying, according to a professional paper, Bulletin 395, recently published by the United States Department of Agriculture. Self-boiled lime-sulphur and a solution of finely divided wettable sulphur, which is a mixture of superfine sulphur, glue, and water, have been proved by experiments to be the best of the known sprays in controlling the scab. The applications can be made in commercial orchards at an average cost not exceeding 5 cents a tree. In certain experiments carried on by plant specialists of the Department of Agriculture such sprayings resulted in an increase in profits of about $1.50 per tree.

The spraying for scab may be combined advantageously with treatment for other diseases, such as brown rot, and insect pests, such as the plum curculio. If this plan is adopted, the following spraying schedule is suggested:

Early varieties.—The early varieties, such as the Greensboro, Carman, Hiley, and those with similar ripening periods should be sprayed as follows:

(1) With arsenate of lead and lime about 10 days after the petals fall. This application may be omitted in sections where the curculio is not a serious factor.

(2) With arsenate of lead and self-boiled lime-sulphur or finely divided wettable sulphur about a month after the petals fall. If the latter type of fungicide is used, the addition of lime, as in the first treatment, may be a desirable precaution against arsenical injury.

(3) With finely divided wettable sulphur or self-boiled lime-sulphur three to four weeks before the fruit ripens, but not less than four weeks before harvest if self-boiled lime sulphur is used. This application may be omitted in sections where brown rot is not seriously injurious.

Midseason varieties.—The treatment recommended for early peaches is applicable, likewise, to midseason varieties, such as the Reeves, Belle, Early Crawford, Elberta, Late Crawford, and Fox. For such varieties, however, the third application is very essential and should not be omitted where brown-rot or scab injury is serious.

Late varieties.—The Salway, Heath, Bilyeu, and varieties with similar ripening periods should be treated as midseason varieties, with the addition of an application of the fungicide alone about a month after the second treatment.

The following concentrations of spray preparations are recommended: Arsenate of lead paste, 1½ pounds (powder, three-fourths pound) in 50 gallons; stone lime, 2 to 3 pounds in 50 gallons; self-boiled lime-sulphur, 8 pounds of lime, and 8 pounds of flour of sulphur in 50 gallons; and finely divided wettable sulphur, 5 pounds in 50 gallons in the case of the paste (approximately 50 per cent sulphur) used in the foregoing experiments.

PEAS, BEANS, AND BEETS.

Directions for Planting These Vegetables in the Home Garden.

Garden peas are a favorite crop in the home garden, and as they are not easily injured by light frosts, they may be planted as soon as the soil can be put in order in the spring, according to the specialists of the United States Department of Agriculture. By selecting a number of varieties it is possible to have a continuous supply of peas throughout a large portion of the growing season. In order to accomplish this, plantings should be made every 10 days or 2 weeks until warm weather comes. The first plantings should be of small-growing, quick-maturing varieties, such as Alaska, First and Best, and Gradus. These kinds do not require supports. They should be followed by the large wrinkled type of peas, such as Champion of England, Telephone, and Prize Taker. These may be supported on brush, on strings attached to stakes driven in the ground, or on wire netting.

Peas should be planted about 2 to 3 inches deep in rows 3 to 4 feet apart. Some gardeners, however, follow the practice of planting in double rows 6 inches apart, with the ordinary space of 3 to 4 feet between these pairs of rows. With varieties requiring support this is a good practice, as the supports can be placed in the narrow space between the rows.

Beans are more susceptible to cold than peas and should not be planted until danger of frost is past and the ground begins to warm up. They are, however, among the most desirable vegetables that the home gardener can raise. There are many different kinds and varieties of beans, but for garden purposes they may be divided into two classes—string and Lima. Both classes are grown commercially over the greater part of the East and adapt themselves to a wide diversity of soils and climate. They grow rapidly and, therefore, leave the area in which they have been planted free for another crop. To secure a continuous supply, it is desirable to make plantings at intervals of 10 days or 2 weeks from the time that the ground is reasonably warm until hot weather sets in.

Both string and Lima beans are subdivided into pole and bush types. The pole Lima bean should be planted with from 8 to 10 seeds in the hill and after the plants become established should be thinned to 3 or 4. The hills should be 4 or 5 feet apart. Bush Lima beans are planted 5 or 6 inches apart in rows 30 to 36 inches apart. Bush beans of the string type may be planted somewhat closer—the plants standing 3 or 4 inches apart in rows from 20 to 24 inches apart if hand cultivation only is to be employed.

Beans of any kind should not be planted any deeper than is necessary to secure good germination. This should never be over 2 inches and on heavy soil it should not be more than 1¼ to 1½ inches.

Beets can be planted comparatively early in the season. It is not necessary to wait until the ground has become warm, if the danger of frost is past. The seed should be sown in drills 14 to 18 inches apart and covered to a depth of about 1 inch. As soon as the plants are well up they should be thinned to stand 3 to 4 inches apart. From 2 to 3 plantings should be made in order to have a continuous supply of young, tender beets.

DIGESTIBILITY OF VEGETABLE FATS.

The vegetable fats most commonly used as food in the United States, namely, olive, cottonseed, peanut, and coconut oils, have been shown to have a high digestibility and consequent food value by experiments recently reported by the Office of Home Economics of the United States Department of Agriculture. Sesame oil, which is used extensively as food in some other countries, but only in a limited way in the United States, was also found to have a high digestibility. Cocoa butter, a product of the cacao bean, and a solid fat at ordinary room temperature, was found, however, to be a little less thoroughly digested than the other oils mentioned. The cocoa butter was about 95 per cent digested, while the other oils were approximately 98 per cent digested.

The experiments indicate that for the most part the vegetable oils studied, especially the five with the higher digestibility ratings, have about the same food value and digestibility as the animal fats in general use.

No ill effects from the consumption of fairly large quantities of vegetable oils were noted and the experimental evidence in general confirmed experience in ranking them as desirable foods for man.

CARE OF SMALL FLOCK.

Suggestions for the Keeper of Poultry for Home Consumption—Housing and Feeding.

For the family which wishes to keep poultry for home consumption rather than for the market, the so-called general-purpose breeds are better suited than what are known as the egg-laying breeds. Plymouth Rocks, Wyandottes, Rhode Island Reds, and Orpingtons are all good varieties for the average person who does not intend to go into the poultry business on a considerable scale. These breeds are good layers and they also make good table poultry. Furthermore, they will hatch their own eggs and brood their own chickens, whereas the Leghorns and other breeds of the egg-laying class do not sit, and the use of expensive incubators and brooders is necessary in order to perpetuate these flocks.

The prime essentials for a small poultry house are fresh air, dryness, sunlight, and space enough to keep the birds comfortable. For the general-purpose breeds about 4 square feet of floor space should be allowed for each bird. The fowls should also have as much outside space as possible to run in. If this area is too small the ground quickly becomes foul and in time makes it difficult to rear chickens with good success. In order to avoid foulness it is advisable to divide the lot and to sow part of it to the quick-growing grains such as oats, wheat, or rye. The hens are turned on to the growing grain when it is a few inches high. Under this method the yards may be changed every three or four weeks during the growing season. A combination that has proved successful consists of 6 or 7 bushels of equal parts of oats and wheat to the acre, wheat alone being used for the last seeding in the fall. For the convenience of those who have only small areas at their disposal it may be stated that an acre contains 43,560 square feet.

To secure a satisfactory number of eggs the fowls should be fed both a dry mash and a scratch ration. The dry mash may consist of equal parts of corn meal, bran, middlings, and beef scrap. This should be kept before the birds in a hopper all the time. A good scratch ration is made up of equal parts of corn, wheat, and oats, fed in a litter 4 to 5 inches deep, twice daily. It is desirable that the birds should eat about as much of this as of the mash. This means feeding about 1 quart of mixed grain daily to 12 Plymouth Rock hens or to 14 Leghorns, and an equal weight of mash. Usually waste table products will also be available, and these may be made up into a moist mash in place of the dry mash. In this case the table scrap if it contains much meat is substituted for the beef scrap. If it does not contain any considerable portion of meat it should merely be added to the dry mash already described.

COOPERATION OF DAIRY INTERESTS.

The greatest good to dairying through the cooperation of all interested organizations was the keynote of the meeting of the representatives of the dairy-cattle registry associations with the Dairy Division, United States Department of Agriculture, in Washington on March 22, 1917.

At the conference many problems of vital importance to cow-testing and bull associations and other lines of dairy work were discussed and plans for closer and more effective work between the breed associations and the Dairy Division were devised. Every effort will be made to prevent the use, in bull associations, of any but bulls of good productive ancestry, so as to insure the most rapid improvement possible in the milk and butter-fat production of the progeny. Communities new to dairying will be assisted, so far as practicable, in obtaining good dairy cows, and will be aided in every way possible. Means of making cow-testing associations more effective and of greater value to the members were considered, and it is expected that in the future the work will become an even more vital force in improving the dairy status of the country.

The problem of contagious cattle diseases was discussed thoroughly, and measures will be undertaken to disseminate widely information as to methods of controlling those diseases.

The dangers incident to shipping cattle from the North into localities that are infested with Texas-fever ticks were emphasized, and efforts will be made to warn breeders of the probable loss of cattle so shipped.

DEPARTMENT HAS NO GAME BIRDS.

A widely circulated report to the effect that the United States Department of Agriculture has English and ring-necked pheasants, and other game birds and their eggs, for distribution is entirely unfounded. The department never has had game birds of any kind for distribution. The department desires, however, to encourage the industry of game farming, as far as it can, by giving information concerning the care of the birds and where breeding stock can be secured. Inquiries on this subject should be addressed to the Bureau of Biological Survey, United States Department of Agriculture, Washington, D. C.

MORE CORN, LESS WATER.

Grow Variety That Will Produce Grain Instead of Cornstalks, Says Department Specialist.

It sometimes becomes necessary to do heavy work, such as hauling water to put out fire, but what's the use of hauling water from the cornfields to the feed lot and hauling it back again to the fields in the shape of uneaten constalks? Very tall-growing corn when sappy and immature is almost all water, and so is wet cornstalk manure.

It used to be that many growers prided themselves on the great height of their cornstalks. The more successful farmers, however, have ceased to haul water from the cornfields to the feed lot in the form of coarse stalks which remain uneaten and haul it back to the fields in the shape of wet cornstalk manure. They do not grow such tall stalks and often profitably allow animals to gather the grain, leaving the stalks in the fields to enrich the soil.

A few years ago silage was thought to have a fixed food value. One can not take out of the silo any more food value than is put in. Hauling and siloing large sappy stalks is heavy work and not as profitable as putting a good, almost mature corn crop into the silo. A somewhat larger and later maturing variety of corn that will thoroughly mature for grain can be used in the northern States for ensilage. Even silage corn should be planted early and given sufficient time to make its best growth and reach the stage of maturity at which husks turn brown and the ears become glazed.

A cooperator in the department's corn work grows a high-yielding variety of corn the stalks of which reach a height of about 6 feet, while his neighbor grows a big, 12-foot variety. In helping each other shred their crops the neighbor's tall-growing corn was shredded first. The stalks were bulky and high loads were hauled from the fields to the shredder. When beginning the shredding of the competitor's corn, which that year produced over 100 bushels of dry shelled corn per acre, the neighbor put on the accustomed high load, and his team could not pull it out of the field. He got down off the load to make an examination, thinking the rack must be pressing against the wheels. The competitor told him he would have to take off a part of the load, to which he replied that he did not have on a big load and was accustomed to hauling larger loads. After being convinced that it was the weight of the load that stalled his team, they removed a portion and hauled the balance to the shredder, from which they obtained 40

bushels of corn, or almost a ton and a half of ears.

What variety of corn should you plant? Since there are thousands of so-called varieties, it is not possible to designate by name the variety you should plant. Furthermore, with corn there is very little in a name. Two lots of seed of the Leaming variety sometimes differ from each other more than two varieties differ from each other. An accurate test of two different lots of the Boone County White variety resulted in one lot producing 18 bushels more per acre than the other lot. Quality is what counts and the varietal name does not designate quality. Plant a variety that has made good in your neighborhood. Plant seed which was grown in your part of the State and was properly field selected and properly cared for during the winter.

C. P. Hartley,
In Charge of Corn Investigations.

PRODUCE INFERTILE EGGS.

Save the Spoilage That Comes from Letting the Male Bird Run with the Flock.

The farmers of the United States lose each year large sums because of improper methods of producing and handling eggs. One-third at least of this loss is easily preventable. It is due to the partial hatching of fertile eggs.

The eggs laid by a hen may be either fertile or infertile, depending on whether or not the male bird has been allowed to run with the female. A fertile egg is one in which the germ has been fertilized by the male bird. Except for this process of fertilization, the male bird has no influence upon the eggs which the hens lay. Egg production is equally great in flocks from which roosters are excluded.

A fertile egg does not keep as well as an infertile one, because the fertilized germ responds more readily to high temperatures than the unfertilized one. It is impossible to hatch an infertile egg or to cause a blood ring to form in one. Such eggs are much more likely to reach the table in good condition and there is much less spoilage in shipments composed entirely of them than in mixed shipments of fertile and infertile eggs.

After the hatching season, therefore, the male birds should be cooked, sold, or confined. In approximately 14 days after this all the eggs laid by the hens will be infertile. These can be marketed much more successfully under the adverse conditions that frequently prevail in the hot summer months.

Heat is the great enemy of eggs, both fertile and infertile. Farmers are urged to follow these simple rules, which cost nothing but time and thought and will add dollars to the poultry yard returns:

1. Keep the nests clean; provide one nest for every four hens.
2. Gather the eggs twice daily.
3. Keep the eggs in a cool, dry room or cellar.
4. Market the eggs at least twice a week.
5. Sell, kill, or confine all male birds as soon as the hatching season is over.

FROST-PROOF CORN.

Recent Experiments Indicate the Possibility of Breeding Such a Variety.

In this age of wonderful achievements, a frost-proof corn is among the possibilities of attainment. When a corn is bred that will withstand spring and fall frosts and grow at low temperatures, like rye, the reign and territory of king corn will be extended and his powers increased.

Recent work of the Office of Corn Investigations, Bureau of Plant Industry, United States Department of Agriculture, indicates the possibility of producing varieties of frost-proof corn and varieties that will continue growth at low temperatures. Some kinds of corn have been found to withstand freezing both in the spring and in the fall, and afterwards continue to grow. Still more encouraging is the fact that some individual plants of these hardy varieties are more enduring than other plants of the same variety.

At the first signs of spring, with patches of snow still on the ground, seed of these varieties has been planted and has shown ability to withstand frozen ground and spring frosts and ultimately to yield well. Planted in February, 1917, plants which were several inches high withstood a freeze on March 5 which froze the ground to a depth of 2 inches.

Of still more importance than the possibility of producing frost-proof corn is the possibility of producing varieties of corn that will continue to thrive and produce grain at lower temperatures than existing varieties. There is much territory with long frost-free periods, where, during nights or for several weeks during the growing season, temperatures remain too low for ordinary varieties of corn to grow.

C. P. Hartley,
In Charge of Corn Investigations.

The United States leads all countries in the consumption of sugar, with an annual average of 3,492,000 tons during the 10 years 1904–1913. The annual consumption in this country is nearly one-fourth of the world's production.

CORN AS A BREADSTUFF.

Corn Meal in Combination with Wheat Flour Makes a Light Spongy Loaf, Wholesome and Palatable.

It may not be generally known to the housewife that corn meal lends itself to the making of "light" bread in combination with wheat flour. It can not, of course, replace wheat flour entirely, but may be used in any proportion up to 25 per cent of the total flour required and still produce an attractive loaf of bread. Although its volume may be somewhat smaller and its texture somewhat poorer than if made from all wheat flour, such a loaf will be light and spongy, with a rich brown crust, wholesome, and very palatable.

Two methods for wheat-and-corn bread have been formulated and tested by H. L. Wessling, assistant chemist, in the Bureau of Chemistry, United States Department of Agriculture. According to the one method the raw meal is employed directly in preparing the dough and no extra time or labor is required in making the bread this way. According to the second method the meal is partially cooked before introducing it into the dough. While this does entail a slight amount of additional time and labor, the result is a loaf of better quality which well repays the extra effort expended.

Wheat and Corn Bread No. 1.

(Enough for 4 loaves.)

Two and one-fourth pounds or 2¼ scant quarts sifted bread flour.
Three-fourths pound or 2⅔ cupfuls corn meal.
Two cakes of compressed yeast.
Three level tablespoonfuls of sugar.
One and one-half level tablespoonfuls of salt.
About 1 quart of liquid (water, milk, or equal parts of milk and water).
Three level tablespoonfuls of shortening if desired.

If milk is used it should be scalded and then cooled until lukewarm. Less yeast may be used, but more time for rising will then be required.

Make a sponge with 2 pounds of white flour, the yeast, salt, sugar, and the lukewarm liquid. Cover and set in a moderately warm place to rise, where it will be free from drafts and where the temperature will be between 80° and 88° F. When the sponge has become very light, which should occur within two hours, beat it up thoroughly, add the softened shortening, if this is to be used, and gradually work in the remainder of the wheat flour which has been sifted with the corn meal. Knead the mixture until a smooth and elastic dough has been formed, which is fairly soft but not sticky. If the dough is too stiff or too soft, add a little more water or flour as required, kneading well after each addition. Cover

and set back to rise again until double in volume, which will require from one to two hours. Knead lightly, divide into three or four approximately equal portions, reserving a small ball of dough for an "indicator." Place this ball of dough in a small jelly glass having straight sides, which has been slightly warmed. Note the volume of dough in the tumbler and mark the glass at twice this volume.

Mold the loaves and place in slightly warmed and greased pans. Place these, together with the glass containing the "indicator," in the same warm place and let rise until the "indicator" shows that it has just doubled in volume. Then place the loaves in the oven, which should be at a good steady heat (400° to 425° F.), and bake 45 to 50 minutes.

Wheat and Corn Bread No. 2.

(Same proportions as for No. 1 except the liquid.)

Put 2⅔ cupfuls (¾ pound) of corn meal into a double boiler or a vessel which can be placed over another one containing boiling water. Add to the meal 3½ cupfuls of cold water; mix thoroughly and bring to the boiling point, stirring frequently. Allow the meal to steam for at least 10 minutes, then cool it until lukewarm. To this scalded and cooled meal add the salt, sugar, 1 cupful of flour, and the yeast rubbed smooth and mixed with 2 cupfuls of lukewarm water. Mix thoroughly, cover, and set in a moderately warm place to rise as directed in method No. 1. When this batter (or sponge) has become very light, which will require about two hours, beat it thoroughly, add the softened shortening, if it is to be used, and the remainder of the white flour (2 pounds or quarts). Knead thoroughly until it is smooth and elastic. Should the dough be either too stiff or too soft add water or flour, a little at a time, working it in thoroughly until the dough is of the proper consistency. Cover and set back in its warm place to rise until double in bulk. Then mold into loaves and finish as directed under method No. 1.

The leaf of alfalfa is divided into three leaflets, the middle one of which has a short stem, differing in this respect from red and alsike clovers, in which the center leaflet is attached directly at the base. This difference in the two plants readily enables one to distinguish alfalfa from red clover when the plants are very young. As the plants become older the leaflets of the alfalfa become more elongated than in the clovers.

The Bureau of Soils has installed an electric furnace at Arlington, Va., for experiments on the volatilization of phosphoric acid from phosphate rock.

PRESERVE EGGS.

Eggs Can Be Kept in Good Condition for Several Months in a Solution of Water Glass or Limewater.

March, April, May, and June are the months when the hens of the country produce about 50 per cent of the lay of the whole year. These are the months, also, when the thrifty housewife who has her own hens or who can draw upon the surplus supply of a near-by neighbor puts away in water glass or limewater eggs for next autumn and winter. To insure success, care must be exercised in this operation. The following directions are from the United States Department of Agriculture.

In the first place, *the eggs must be fresh*, preferably not more than two or three days old. This is the reason why it is much more satisfactory to put away eggs produced in one's own chicken yard.

Infertile eggs are best if they can be obtained; so, after the hatching, exclude roosters from the flock and kill them for the table as needed.

The shells must be clean. Washing an egg with a soiled shell lessens its keeping quality. The protective gelatinous covering over the shell is removed by water, and when this is gone the egg spoils more rapidly.

The shells also must be free from even the tiniest crack. One cracked egg will spoil a large number of sound eggs when packed in water glass.

Earthenware crocks are good containers. The crocks must be clean and sound. Scald them and let them cool completely before use. A crock holding 6 gallons will accommodate 18 dozens of eggs and about 22 pints of solution. Too large crocks are not desirable, since they increase the liability of breaking some of the eggs and spoiling the entire batch.

It must be remembered that the eggs on the bottom crack first and that those in the bottom of the crocks are the last to be removed for use. Eggs can be put up in smaller crocks and the eggs put in the crock first should be used first in the household.

Water-Glass Method.

"Water glass" is known to the chemist as sodium silicate. It can be purchased by the quart from druggists or poultry supply men. It is a pale yellow, odorless, sirupy liquid. It is diluted in the proportion of 1 part of silicate to 9 parts of distilled water, rain water, or other water. *In any case, the water should be boiled and then allowed to cool.* Half fill the vessel with this solution and place the eggs in it, being careful not to crack them. The eggs can be added a few at a time until the container is filled. Be sure to keep about 2 inches of water glass above the eggs. Cover the crock and place it in the coolest place available from which the crock will not have to be moved. Inspect the crock from time to time and replace any water that has evaporated with cool boiled water.

How to Use the Preserved Eggs.

When the eggs are to be used, remove them as desired, rinse in clean, cold water, and use immediately.

Eggs preserved in water glass can be used for soft boiling or poaching up to November. Before boiling such eggs prick a tiny hole in the large end of the shell with a needle to keep them from cracking. They are satisfactory for frying until about December. From that time until the end of the usual storage period—that is until March—they can be used for omelettes, scrambled eggs, custards, cakes, and general cookery. As the eggs age, the white becomes thinner and is harder to beat. The yoke membrane becomes more delicate and it is correspondingly difficult to separate the whites from the yolks. Sometimes the white of the egg is tinged pink after very long keeping in water glass. This is due, probably, to a little iron which is in the sodium silicate, but which apparently does not injure the egg for food purposes.

Limewater Method.

Limewater is also satisfactory for preserving eggs and is slightly less expensive than water glass. A solution is made by placing 2 or 3 pounds of unslaked lime in 5 gallons of water, which has been boiled and allowed to cool, and allowing the mixture to stand until the lime settles and the liquid is clear. The eggs should be placed in a clean earthenware jar or other suitable vessel and covered to a depth of 2 inches with the liquid. Remove the eggs as desired, rinse in clean, cold water, and use immediately.

TREAT GRAIN SEED.

(*Continued from page 5.*)

promptly as possible after treatment and may be planted without further delay. Experience has shown that of the two treatments here described the formaldehyde method is less liable to injure the seed.

Prevention of Oat Smut and the Covered Smut of Barley.

In all cases run the seed through a fanning mill in order to remove smut masses and imperfect grains. Then place the seed to be treated in a wagon box or in a pile on the granary floor. By means of a sprinkling can apply a solution of formaldehyde consisting of 1 pint of formaldehyde to 40 gallons of water. Stir with shovel or hoe until every grain is thoroughly wet. Shovel into a pile and cover with bags previously disinfected for a few hours or over night. The seed should then be dried sufficiently to permit sowing. This same method may be varied by using bluestone instead of formaldehyde, but the bluestone solution is liable to prove more injurious to germination.

WASTE NO FOOD

Food Waste of About 700 Million Dollars

"For partial immediate relief, every individual and community should consider earnestly the matter of food conservation and the limitation of waste. As a Nation we seem to have a disdain of economizing. In many homes there is a strong feeling that it is 'only decent' to provide more food than will be eaten and that it is demeaning to reckon closely. The experts of the Department of Agriculture report to me that the dietary studies made by them point to an annual food waste of about $700,000,000. Of course, the waste in families of very limited means is slight, but in the families of moderate and ample means the waste is considerable. Even if the estimate were reduced by half, the waste would still be enormous.

"The food waste in the household, the experts assert, results in large measure from bad preparation and bad cooking, from improper care and handling, and, in well-to-do families, from serving an undue number of courses and an over-abundant supply and failing to save and utilize the food not consumed. As an instance of improper handling, it is discovered that in the preparation of potatoes 20 per cent of the edible portion in many cases is discarded."—SECRETARY OF AGRICULTURE, March 3, 1917.

Food is wasted

(a) When we eat more food than our bodies need for growth and repair and to supply energy for our work. Overeating tends to poor health and fat instead of brawn, makes us sluggish and indolent instead of energetic and resourceful. Eat enough and no more. Eat for physical and mental efficiency.

(b) When food is burned or spoiled in cooking. Improperly prepared or poorly seasoned food will be left on the table and probably wasted. Buy food wisely and then prepare it carefully.

(c) When too much food is prepared for a meal. Unserved portions are apt to be thrown into the garbage pail or allowed to spoil. Many housekeepers do not know how to use left-over foods to make appetizing dishes.

(d) When too much food is served at a meal. Uneaten portions are left on the plate and later thrown into the garbage pail. Learn to know the needs of your family, and serve each no more than you think he will want.

(e) When anything edible is allowed to go to the garbage pail or allowed to spoil for lack of proper handling.

(f) When food is handled carelessly. Buy clean food, keep it clean until used, and be neat in all details of cooking and serving. This lessens waste and is a valuable health measure as well.

Feed Your Own Family First

Don't feed high-priced human food to hogs or chickens.
Don't send valuable food to the incinerator or the fertilizer heap.
Don't pour into the sewer nourishing food in the shape of milk, skim milk, sweet or sour, soup, gravy, or melted fat, or water in which cereals or vegetables have been cooked.
Keep good food out of your garbage pail and kitchen sink.

DEMONSTRATE THRIFT IN YOUR HOME
MAKE SAVING, RATHER THAN SPENDING, YOUR SOCIAL STANDARD

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., APRIL 25, 1917. No. 38

PROGRAM FOR FOOD PRODUCTION AND CONSERVATION.

Conference of Agricultural Representatives of Thirty-two States with the Secretary of Agriculture Prepares Program to Increase Production, Promote Food Saving, Provide Labor for Agricultural Industries, and Secure Better Distribution of Food Products.

The Secretary of Agriculture requested the State agricultural officials and representatives of the agricultural colleges in all the States from New York to the Rocky Mountains to meet him in St. Louis to discuss the agricultural situation in the present national crisis. The conference convened at the Jefferson Hotel at 10 o'clock Monday, April 9, and continued through Tuesday. Thirty-two States were represented by sixty-five officials and the department by the Secretary of Agriculture and the chiefs of the Bureau of Plant Industry and the Office of Markets and Rural Organization.

After a thorough discussion of the major problems involved, the conference decided to deal with the whole subject matter in four major divisions:

1. Production and labor.
2. Distribution and prices.
3. Economy and utilization.
4. Effective organization.

A representative committee of 15 [1] was appointed by the conference to formulate its views on these subjects and to submit suggestions for courses of action. Subcommittees were appointed by this committee to deal with each of the enumerated matters. The subcommittees reported to the full committee, which in turn reported to the conference.

After consideration of the report of the committee of 15, the conference decided to express its views and to urge the courses of action, as indicated below:

The Farmer's Responsibility.

Upon the farmer rests in large measure the final responsibility of winning the war in which we are now involved. The importance to the Nation of an adequate food supply, especially for the present year, can not be overemphasized. The world's food reserve is very low. Not only our own consumers, but much of the world at large, must rely more completely than ever before upon the American farmer. Therefore, the man who tills the soil and supports the soldier in the field and the family at home is rendering as noble and patriotic a service as is the man who bears the brunt of battle.

The American farmer has long shown his ability to produce more food per man and at lower cost per unit than any other farmer in the world, but he has never had to do his best. He needs to do his best now. This is not the time in which to experiment with new and untried crops and processes. It is very important that the farmer devote his principal efforts to the production of such crops and the employment of such methods as are well established in his community and as are likely to yield the maximum return in food and clothing material.

Within the next 60 days the final measure of crop acreage and food production for this year will have been established. We urge the importance of the immediate mobilization of all available service of the Federal and State Departments of Agriculture and the colleges of agriculture in cooperation with the press, the banks, the commercial organizations, the religious and the social societies, that all may heartily join with the farmer in performing the patriotic duty of providing and conserving food.

Because of the world shortage of food, it is scarcely possible that the production of staple crops by the farmers of the United States can be too great this year. There is every reason to believe that a generous price will be paid for the harvest of their fields.

Increasing the Food Supply.

There is yet time to add substantially to the bread supply by increasing the acreage of spring wheat in the Northern States. Throughout the United States, east of the one hundredth meridian, the corn area may be increased to advantage, with a view to its uses both for human food and animal production.

The production of a normal cotton crop is necessary. This can best be accomplished by more intensive cultivation and increased fertilization rather than by increasing the acreage and thus neglecting the food and forage crops so important to the South.

In the districts where wheat has been winter killed replanting is suggested with oats, corn, or sorghum, as climatic conditions may determine. Where barley and oats are proved and reliable crops, they should be planted to the maximum that can be effectively handled. In portions of the Northern and Eastern States, where the season is too short for the great staple crops, the buckwheat acreage may well be increased.

An important increase in our food supply may be made by enlarging the area planted to navy beans in the North and West and to Mexican and Tepary beans in the Southwest, and by stimulating in every reasonable way an increase in the area of potatoes planted, especially for local use.

Sweet potatoes in the South will undoubtedly be needed in their fresh state in larger quantity than usual and also for storing for winter use either in their natural state or as canned or desiccated products.

Where peanuts succeed, production may well be enlarged because of their value both as food and forage. A reasonable seed reserve for replanting tilled crops should be held wherever practicable.

While it is important to utilize available lands in the staple small grains and tilled crops, care should be taken to avoid undue encroachment on the area used for pasturage or hay which is required for live-stock production.

Authority should be granted the Secretary of Agriculture to advance to farmers under proper safeguards seeds required to insure the production of crops decided to be necessary for the welfare of the Nation.

THE SCHOOL CHILDREN'S PART.

We appeal to the youth of the Nation to put forth every effort to produce foodstuffs

[1] The personnel of the several committees of different States and institutions represented at the conference and the names of those in attendance will be found at close of this statement.

in gardens and fields. There could be no better expression of true patriotic devotion to the country. It has been demonstrated through the boys' and girls' clubs that it is possible for the farm family to supply itself with much of the food required, thereby releasing the commercial product of the country for the needs of the people in the cities and in foreign lands.

In a normal season it is certain that there will be large quantities of perishable products which can not be properly preserved in the home. To meet this emergency it is recommended that local and municipal drying and canning establishments be improvised to conserve this material.

Keeping up the Meat Supply.

The live-stock holdings of the farmers of the United States are already too low. It would be most unfortunate if these numbers be diminished further under the pressure of the present demand for food. Indeed, an early increase of the animal products of the country should be made. Such an increase must come chiefly through the enlarging of our feed supply by more successful methods of feeding, and through more complete control of contagious diseases.

Milk production could be increased fully one-fourth by more liberal and intelligent feeding. Pork production could be increased substantially through the more extensive use of fall litters, better care, and feeding. The poultry products of the United States could be doubled within a year.

Contagious diseases of farm animals take a toll of more than a quarter of a billion dollars annually. More than half of this loss is due to controllable diseases, such as hog cholera, black-leg, and Texas fever. The Federal Government, cooperating with the States, could profitably expand its intensive regulatory services so as to embrace every important live-stock district in this country.

Mobilizing Farm Labor.

One of the principal limiting elements of food production is the labor supply on the farm. Indiscriminate enlistment from the farms with no plan for labor replacement will reduce food production below its present low level.

The plan for public defense should include as definite a provision for enlistment for food supply as for service at the front.

In addition to more than one-half of those applying for enlistment and rejected because of unfitness for military service, there are more than two million of boys between the ages of 15 and 19 years in the cities and towns not now engaged in productive work vital to the Nation in the present war emergency. These constitute the most important hitherto unorganized and unutilized labor resource available for this emergency.

In consideration of all these facts the plan of military enlistment should be broadened so as to include in a national service those who, by reason of their age or physical condition, are permanently or temporarily incapacitated for active military duty but who are able to render to the Government equally indispensable service in the production of food, supplies, and munitions.

This enlistment should include three classes: Men beyond military age; men of military age but not accepted for active military duty; and boys under age for enlistment.

The Government should make plans at once for the mobilization of this important resource for the production of food and other necessities. This proposed enlistment in the national service should be regarded as part of the public patriotic service in the present war emergency and be given proper official recognition.

The Harvest Emergency.

The husbanding of a matured crop promptly is often the most vital and crucial point in production and is the point of the heaviest labor demand on the farm. We suggest that the Federal Department of Agriculture, cooperating with the State departments of agriculture and other agencies, should take steps to mobilize sufficient farm labor to meet all emergencies which may arise.

A Survey of the Food Supply.

We suggest the importance of a thoroughgoing survey of the food, labor, and other resources of the country and of the needs of the local communities to the end that every part of the country may be maintained in effective service. Therefore, we recommend:

That power be conferred upon the Secretary of Agriculture, in cooperation with the Federal Trade Commission so far as practicable, to secure such information regarding the food supply of the Nation and all business enterprises related thereto as may be necessary to enable Congress to legislate suitably for the protection of the people in the existing crisis and for the information of the Nation in its daily conduct, giving to the Secretary of Agriculture for this purpose power to administer oaths, to examine witnesses, and to call for the production of books and papers, with means of enforcement and penalties.

That authority be conferred upon the Secretary of Agriculture to establish market grades and classes of farm products, including seeds, and standards for receptacles for such products. For this purpose he should consult the various trades concerned. The established grades for corn and wheat undoubtedly will be of much advantage in purchasing supplies, and the establishment of grades for other products will be fully justified for the same purpose. Furthermore, such standards, with a suitable degree of supervision of their application, will result in returning to the producer the value of the particular qualities he produces, thus encouraging adequate production in the future. This is of special importance in connection with the perishable crops, but applies with almost equal force to the staples.

The Secretary of Agriculture should be authorized by law to license warehouses, packing plants, mills, cold storages, produce exchanges, cooperative and other shipping associations, commission merchants, auctioneers, brokers, jobbers, wholesale distributors, and other individuals, partnerships, associations, and corporations engaged in the business of marketing and distributing farm and food products. When directed by the President, the Secretary should have power, after advising with the Council of National Defense as to the necessity of such a step, to take over and operate such of these businesses as may be warranted, in a manner similar to receivership.

In order to facilitate the solution of transportation problems, Government agencies should do all in their power to bring about a relatively adequate supply of cars for moving food and other necessities.

Communities, counties, and cities should be urged to take steps that will lead toward a larger degree of local and district self-support, especially in perishable products, by making inventories of food needs and surveys of neighboring possibilities of production and in general by closer cooperation of the local consuming and producing interests, and by the provision of local marketing facilities.

PRICE PUBLICITY.

To bring about a greater equality of distribution considering the consumptive demands of population centers, the market information facilities of the United States Department of Agriculture and the several State departments should be extended and made as effective as possible. It should include the publishing, as widely as possible for the information of producers and consumers of farm products, of average prices of foods, feeds, and live stock, and particularly those paid by the War Department, if purchases are made direct in the open market instead of by the usual contract method.

If not incompatible with wise policy, the War Department should determine and state where training camps are to be located, so that local production can be expanded to care in some degree for the increased consumption as a measure of general economy, and to effect a further relief of transportation facilities.

Appropriate steps should be taken through suitable Federal authorities, such as the Council of National Defense, the Department of Agriculture, the Department of Commerce, and the Federal Trade Commission, to facilitate the supplying of agricul-

tural implements and machinery, particularly for seeding and harvesting, by bringing about reasonable deliveries of the necessary materials, in preference to filling orders for such products as are not required in the existing emergency.

Steps should be taken at once to secure the preference movement of freight shipments of farm machinery, seeds, fertilizers, and spraying materials.

PRICE FIXING, IF NECESSARY.

The very low food reserves of the world, due to last year's short crops, the increased demands due to the consumption and waste of war, and the disappointing condition of the winter grain crop give ample assurance of profitable prices to producers this year. Therefore, the fixing of maximum or minimum prices need not be undertaken at this time, but the fact that such a course may become necessary in the future advises the creation of agencies which will enable the Government to act wisely when the necessity may arise. To this end, it would be well for the Congress of the United States to authorize the Council of National Defense, if deemed necessary, to purchase, store, and subsequently distribute food products, or to fix prices in any national emergency caused by a temporary or local overproduction, or by a sudden ending of the war, or by restraints of trade, manipulations or uneconomic speculation, in order that producers may not be required to suffer loss on account of the extraordinary efforts they are now asked to make, and in order that consumers may not be required to pay oppressive prices in case of disorganized or inadequate transportation. Information should be continuingly maintained by the Department of Agriculture that will afford the council intelligent data upon which to act wisely and fairly in any emergency.

Increased Home Economy.

We are the most wasteful people in the world in our ways of living. Our tastes and desires have been educated beyond our incomes.

Almost as great a saving may be made through the more economical manufacture, purchase, and use of food as can be made through processes of production which are immediately feasible.

Our breadstuff supply may be increased by one-twelfth, or 18,000,000 barrels of flour a year, by milling our wheat so as to make 81 per cent of the kernel into flour, instead of 73 per cent as at present. This flour would have as high nutritive value as that which we now use.

An impertant saving may be effected by making the diet as largely vegetarian as possible, without lowering food efficiency, by a partial substitution of such foods as beans and peas and of milk and its products, including skimmed milk, for the more expensive meats.

At present prices a larger use of corn and rice products as partial substitutes for the more expensive wheat products is suggested.

The substitution of the home-grown and home-prepared grain products for the much more expensive refined commercial foods, known as breakfast foods, will make a large saving. Adequate gardens should provide the home supply of vegetables, which are expensive foods when purchased at existing prices. The home storage and preservation of foods, such as eggs, vegetables, fruits, and meats, should be increased.

The serious food wastes that occur in many households through a lack of culinary knowledge and skill may be minimized through instruction in better methods.

These economies will be secured chiefly, if not fully, through the further education of housewives. It is highly important that all educational agencies available for this purpose engage in widespread propaganda and instruction concerning the economical use of human foods.

National and State Organization Needed.

The Council of National Defense is charged with the duty of mobilizing the resources of the Nation, having as one of its members the Secretary of Agriculture. We recommend additional machinery, as follows:

A relatively small central agricultural body, whose services and presence might be required in Washington constantly, to be composed of men who have wide knowledge of agricultural matters and executive experience. In selecting those men, attention should be paid to geographical distribution.

A large national advisory body composed of representatives of the leading agricultural agencies and associations concerned not only in production but in distributing and handling commodities.

A small central agricultural body in each State representing various agricultural interests, including agricultural officials, representatives of agricultural colleges, bankers', business, farmers', and women's organizations, etc., concerned in the production, distribution, and utilization of food supplies and agricultural raw materials. This body should be designated by the governor and, if the State has a central council of safety or defense, should be coordinated with it.

Such county, urban, and other local bodies as the State authorities, including this State central agency, may see fit to suggest.

The national central body and the State central bodies will be expected to keep in intimate contact and to work in close cooperation.

An Emergency Appropriation.

To meet the extraordinary needs of agriculture in this emergency we recommend an appropriation of $25,000,000, or so much thereof as may be needed, to be available immediately for the use of the Secretary of Agriculture in such manner as he may deem best.

The situation which now confronts our country is a great emergency—the greatest, perhaps, in its history. Emergency measures are needed to meet unusual conditions. The recommendations made in this statement have been formulated because it is believed they are necessary in order to meet present conditions. They are war measures. It is strongly urged that Congress and State legislatures, in passing laws or in making appropriations intended to carry out these or other plans for assuring an adequate food and clothing supply, should, so far as possible, be governed by the principle that when the emergency ceases much permanent reconstruction in agricultural policies and plans may be necessary.

The recommendations in the main call for Federal action, but State governments can and should cooperate to the fullest degree in considering and executing plans of cooperation and of supplemental legislation and appropriation for the great common purpose herein enunciated.

Resolutions Committee of Conference on Agricultural Situation.

Commissioners of agriculture.—H. K. Bryson, Tennessee; G. A. Stauffer, Ohio; Jewell Mayes, Missouri; Charles S. Wilson, New York; J. N. Hagan, North Dakota; J. A. Wade, Alabama.

Agricultural colleges.—W. O. Thompson, Ohio; H. J. Waters, Kansas; H. L. Russell, Wisconsin; Eugene Davenport, Illinois; Clarence Ousley, Texas; J. M. Hamilton, Montana.

United States Department of Agriculture.—David F. Houston, Secretary of Agriculture; W. A. Taylor, Chief of the Bureau of Plant Industry; Charles J. Brand, Chief of the Office of Markets and Rural Organization.

Following are the subcommittees appointed to consider the subjects indicated and to draft appropriate resolutions:

Production and labor.—H. J. Waters, Eugene Davenport, J. A. Wade, Jewell Mayes, G. A. Stauffer, W. A. Taylor.

Economy.—J. M. Hamilton, H. K. Bryson, W. H. Jordan.

Distribution and prices.—Clarence Ousley, J. N. Hagan, Kenyon L. Butterfield, Charles J. Brand.

Organization.—W. O. Thompson, Charles S. Wilson, H. L. Russell, D. F. Houston.

Representatives Who Took Part in the Conference.

UNITED STATES DEPARTMENT OF AGRICULTURE.

David F. Houston, Secretary of Agriculture; Charles J. Brand, Chief of the Office of Markets and Rural Organization; Wm. A. Taylor, Chief of the Bureau of Plant Industry.

AGRICULTURAL COLLEGES.

Alabama.—J. F. Duggar, director of extension service.

Arkansas.—Martin Nelson, dean, College of Agriculture; W. C. Lassetter, acting director of extension; J. G. Futrall, president, University of Arkansas.

Colorado.—Alvin Kezer, agronomist, Colorado Agricultural College.

Delaware.—Harry Hayward, dean, College of Agriculture.

Georgia.—J. K. Giles, assistant State agent in extension work.

Illinois.—Engene Davenport, dean, College of Agriculture; Cyril G. Hopkins, chief in agronomy, College of Agriculture; Herbert W. Mumford, College of Agriculture.

Indiana.—W. E. Stone, president, Purdue University.

Iowa.—R. E. Pearson, president, Iowa State College, and member of executive committee of colleges and stations; C. F. Curtiss, Iowa State College.

Kansas.—H. J. Waters, president, Kansas State Agricultural College, and member of executive committee of colleges and stations; W. M. Jardine, dean, College of Agriculture.

Kentucky.—George Roberts, acting dean, College of Agriculture.

Louisiana.—W. R. Dodson, dean, College of Agriculture, and director of station.

Massachusetts.—Kenyon L. Butterfield, president, Association of Colleges and Stations.

Michigan.—R. S. Shaw, director, Agricultural Experiment Station.

Minnesota.—A. D. Wilson, director of extension work.

Mississippi.—W. H. Smith, president, Agricultural and Mechanical College; R. S. Wilson, acting director of extension work.

Missouri.—A. R. Hill, president, University of Missouri; F. B. Mumford, dean and director, College of Agriculture.

Montana.—J. M. Hamilton, president, State College of Agriculture.

Nebraska.—Samuel Avery, chancellor, University of Nebraska; E. A. Burnett, dean of agriculture; C. W. Pugsley, director of extension work; F. L. Haller, regent.

New York.—A. R. Mann, acting dean, College of Agriculture; W. H. Jordan, director of experiment station and member of executive committee of colleges and stations.

North Carolina.—W. C. Riddick, president, College of Agriculture and Engineering.

North Dakota.—E. F. Ladd, president, Agricultural College; Thomas P. Cooper, director, Agricultural Extension and Experiment Station.

Ohio.—W. O. Thompson, president, Ohio State University, and chairman executive committee of colleges and stations.

Oklahoma.—J. W. Cantwell, president, Oklahoma Agricultural and Mechanical College.

Pennsylvania.—M. S. McDowell, director of extension work.

South Dakota.—E. C. Perisho, president, State College.

Tennessee.—Charles A. Keffer, director of extension work.

Texas.—Clarence Ousley, director of extension work.

Vermont.—J. L. Hills, dean, College of Agriculture; secretary of executive committee of colleges and stations.

Virginia.—Jesse M. Jones, director of extension work.

West Virginia.—John Lee Coulter, dean, College of Agriculture.

Wisconsin.—H. L. Russell, dean, College of Agriculture, and member of executive committee of colleges and stations.

Wyoming.—H. G. Knight, dean, College of Agriculture, and director of experiment station.

STATE AGRICULTURAL COMMISSIONERS.

Alabama.—J. A. Wade, commissioner of agriculture.

Arkansas.—John H. Page, commissioner of agriculture.

Georgia.—L. B. Jackson, representing commissioner of agriculture.

Illinois.—B. M. Davison, secretary, State Board of Agriculture.

Indiana.—William Jones, financial secretary.

Iowa.—A. R. Corey, commissioner of agriculture.

Kansas.—J. C. Mohler, secretary, State Board of Agriculture.

Kentucky.—Mat S. Cohen, commissioner of agriculture.

Louisiana.—Harry D. Wilson, commissioner of agriculture.

Missouri.—Jewell Mayes, secretary, State Board of Agriculture.

Montana.—Charles D. Greenfield, commissioner of agriculture.

Nebraska.—E. R. Danielson, secretary, State Board of Agriculture.

New York.—Charles S. Wilson, commissioner of agriculture.

North Dakota.—J. N. Hagan, commissioner of agriculture.

Ohio.—G. A. Stauffer, secretary, State Board of Agriculture.

Pennsylvania.—Charles E. Patton, secretary, Board of Agriculture.

Tennessee.—H. K. Bryson, commissioner of agriculture.

Texas.—Fred W. Davis, commissioner of agriculture.

West Virginia.—J. H. Stewart, commissioner of agriculture.

Wisconsin.—C. P. Norgord, commissioner of agriculture.

PACIFIC COAST CONFERENCE.

A conference of the State agricultural officials and representatives of the land-grant colleges, similar to that held at St. Louis, was held at Berkeley, Cal., on April 13. The conference was called at the request of the Secretary of Agriculture by President Benjamin Ide Wheeler, of the University of California. The seven Western States named below were represented in the conference.

Following is a telegraphic report of this conference addressed, under date of April 13, by President Wheeler as chairman, to the Secretary of Agriculture:

"At conference held to-day at University of California, in accordance with your suggestion, representatives of Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington adopted unanimously following resolutions:

"*Resolved*, That the agricultural institutions of the seven Western States here represented express ourselves to Secretary Houston as heartily in accord with the conclusions of the St. Louis conference, and that we place our entire resources at the disposal and direction of the National Government in his effort to mitigate the present serious food shortage.

"*Further resolved*, That we at once acquaint the Secretary of Agriculture with the extent of our available resources, and that we further state to him the additional funds needed to place the entire plan of agricultural advisement into operation in our States.

"*Further resolved*, That we advise our Representatives and Senators of our hearty accord with the Secretary of Agriculture and that we believe that a further Federal appropriation to grapple with the present agricultural situation would be wise.

"*Further resolved*, That since the agricultural extension field men are already Federal officers, and that for the period of war they are to be even under more direct Federal supervision; that the county agents and other field men be given such official designation as to dissociate them from civilians and bring to them the dignity and authority of other Federal officials who are occupied in prosecuting the war to a successful conclusion.

"BENJAMIN IDE WHEELER,
"*Chairman.*"

WORK THE CORN LAND.

Patriotic Duty of Every Corn Grower to Take Every Precaution for Largest Possible Yield.

In emergencies it may be necessary for some patriots to unyoke the oxen and leave the plow standing in the furrow, but the lasting support of the Nation requires efficient patriots to keep the plow going. The soil supports the corn; corn supports animals; corn and animals support an army; and "armies fight on their bellies." Let us properly care for the goose that lays the golden egg.

Whether corn prices are high or low, the farmer's profit depends on obtaining large acre yields. Large acre yields reduce the expense of both labor and land. It is remarkable that acre yields are increasing most rapidly in the States southeast and the States north and west of the corn-belt States. These increased acre yields are largely due to earlier and thicker planting of better seed corn. Unnecessary losses from planting poor seed corn are diminishing as it is becoming better realized that neither frosts nor droughts can exterminate good acclimated varieties if sufficient seed be saved from good crops to last until another good crop is obtained. Good seed corn will retain its powers of germination and production for four or five years.

Northern States.

ASSURANCE OF A GOOD CORN CROP.

In the northern third of the United States, corn yields are reduced by lack of heat more than by all other causes combined. The soil freezes to such great depths that the corn crop is slow in starting in the spring, unless assisted by deep spring plowing and frequent early cultivation. The object to be kept in mind in preparing the land is to cause it to warm up rapidly in the spring. Methods that permit air to enter the soil freely will assist the soil in becoming warm. The surface should be kept open and as dry as possible.

PLANTING.

With due care in preparing land and with proper seed corn, plantings should be made several weeks earlier than is usually practiced in the Northern States. Enormous losses due to failure of the corn crop to mature can be largely prevented by earlier planting. It has become customary to delay corn planting until the soil is warm, because poor seed will rot in cold soil. The proper kind of seed corn can be planted before danger from frosts is past. Spring frosts do not seriously damage very early planted corn. One fall frost is worse than

three spring frosts. The earliest plantings mature earliest and usually produce the largest and best crops. While it may not always be advisable to plant "one for the blackbird, one for the crow, one for the cutworm, and three for to grow," it is advisable even with the best of seed to plant two or three kernels for every stalk desired. Some of the young plants will be destroyed. It is very much better and more profitable to pull out the weaker and superfluous plants than to attempt to get good results by replanting. Replanting very seldom gives good results. Thick planting and pulling out the weaker stalks increase the chances of obtaining good yields.

Central and Southern States.

ASSURANCE OF A GOOD CORN CROP.

In the Central and Southern States the scarcity of soil moisture in the middle of the summer reduces the corn crop more than all other causes combined. The best assurance of a good corn crop is to get moisture into the soil in as large quantities and to as great depths as possible.

To allow weeds, alfalfa, rye, or other plants to grow during the spring upon land to be planted to corn is to invite failure of the corn crop.

To allow the soil to become dry enough in the spring before plowing to break up in big clods is to invite failure of the corn crop. If the plowing has been delayed until spring, the land should be disked before it has a chance to become too dry to plow. Disking is more rapid and should be done before the plowing in order to keep the ground from becoming too dry. Deep plowing should not be done in the spring. If followed by drought, it causes the land to dry out to greater depths than would result from shallow plowing.

ONE OR MORE LATER PLANTINGS TO REDUCE LOSS FROM DROUGHT.

The main corn planting is now completed in the South. When this main planting begins to form ears, the occurrence of a drought will ruin the crop unless a good supply of moisture has been stored in the subsoil. To reduce the chances of loss from drought, one or more later plantings should be made. Summer droughts are sometimes broken in time to cause later plantings to yield well. Good seed corn should be in readiness to make these later plantings as promptly as possible should droughts or floods injure the early plantings.

C. P. HARTLEY,
In Charge of Corn Investigations.

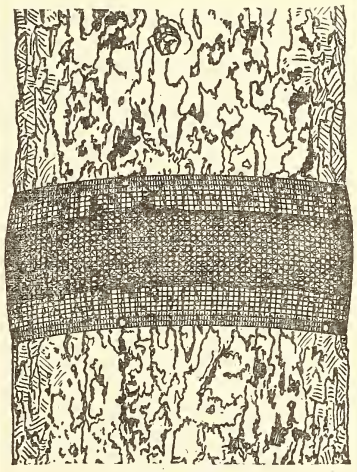
The lime requirement of sweet clover is as high as that of red clover or alfalfa. Maximum growth is obtained only on soils that are not acid.

CODLING MOTH TRAP.

New Device to Be Used in Place of "Banding" Method—Not a Substitute for Spraying.

A codling moth trap has been devised by E. H. Siegler, of the Bureau of Entomology, United States Department of Agriculture, to be used as a substitute for what is known as the "banding" method for destroying the codling moth. The banding method, in which a folded strip of burlap is wrapped around the tree trunk, demands a considerable amount of labor, and the new trap is designed to minimize this.

The trap affords an attractive place for the larvæ to spin their cocoons, and it prevents the escape of the moths after they emerge



Codling moth trap.

from these. The trap, which consists of a burlap band covered by a strip of wire screen, is made as follows:

Strips of burlap 6 inches wide are folded into three thicknesses. The loose bark from the lower branches and trunk of the tree is removed and a strip of this burlap folded once around the trunk. It is held in place by large tacks, which should be driven in in such a way that the edge projects about one-fourth of an inch beyond the burlap. The burlap is then covered by black-painted wire screen with 12 meshes to the inch. This is cut into strips 6 inches wide and the edges of each strip are folded twice, allowing one-fourth of an inch to each fold. The strip of screen should be long enough to allow for an overlap of 3 to 4 inches when placed around the trunk of the tree. The wire screen is placed over the burlap band and tacked to the tree in such a way that both the upper and lower edges fit snugly against the bark. The projecting tacks used to fasten the burlap to the tree prevent the wire pressing against the cloth. To make sure that no moths may escape through openings along the edges of the trap or along the flap, a thin coating of pitch tar may be used. This material, when heated, may be applied readily with a brush.

The traps may be placed on the tree at any time during the winter or in the spring not later than one month after the petals have dropped. As long as no openings occur in them they will require no further attention. The codling moth larva, having completed its feeding in the fruit, seeks a place to spin its cocoon, and for this purpose generally crawls up or down a tree trunk. Meeting the trap, it enters through one of the openings in the mesh of the wire screen and spins its cocoon beneath the burlap band. When it emerges as a moth its larger size makes it unable to escape through the opening in the screen by which it entered the trap.

It must be clearly understood, however, that this trap is not a substitute for spraying, but merely an additional precaution. Nevertheless, some larvæ will invariably escape, and the offspring of these are largely responsible for the damage to the fruit crop. By the use of the codling moth trap, in addition to thorough spraying, the majority of the unpoisoned larvæ may be captured and injury by later broods will be materially reduced.

POSSIBILITIES IN FOX FARMING.

Enormous profits have been claimed from raising silver foxes, and consequently much interest has been manifest in the industry the last few years. Also much misconception exists concerning the possibilities in fox ranching. Ned Dearborn, of the Biological Survey, United States Department of Agriculture, has studied intimately the silver fox industry both in Canada and the United States, and in the new bulletin, No. 795, corrects some common erroneous impressions.

"When rightly undertaken, and with due consideration to climate, surroundings, and breeding stock," concludes the author, "fox farming, and especially the breeding of silver foxes, frequently has proved profitable. Ranches are now established in most of the Canadian Provinces and in Maine, New Hampshire, Vermont, Massachusetts, New York, Pennsylvania, Ohio, Wisconsin, Michigan, Minnesota, Missouri, Oregon, Washington, and Alaska. In general a long, cold season and at least a moderate rainfall are important for the production of the best furs, and the fitness of a region for fox farming can be judged from the quality of fur produced by native wild foxes. The lessening number of these animals in the wild state, together with the increasing demand for their furs, sound a warning that if the

demand is to continue to be met it must be through domestication."

Care of the animals, expense of the business, its profits, and how and where fox farming may be undertaken with the promise of any degree of success is discussed. The distinction between red, cross, silver, and black foxes is explained, as well as the relative values of the pelts. This bulletin may be obtained free by writing to the Division of Publications, United States Department of Agriculture, Washington, D. C.

COTTAGE CHEESE.

How to Make Palatable and Nourishing Food from Skim Milk.

Cottage cheese, a delicious and nourishing food, can be made from skim milk which might otherwise go to waste, say the dairy specialists of the United States Department of Agriculture. After removing the cream for coffee, the skim milk that is not needed for puddings, gravies, etc., can easily be made into cottage cheese. If the milk is sweet it should be placed in a pan and allowed to remain in a clean, warm place at a temperature of about 75° until it clabbers. The clabbered milk should have a clean, sour flavor. Ordinarily this will take about 48 hours, but when it is desirable to hasten the process a small quantity of clean-flavored soured milk may be mixed with the sweet milk. As soon as the milk has thickened to the consistency of thin jelly, it should be cut into pieces the size of a walnut, after which the curd should be stirred thoroughly with a spoon.

Place the pan of broken curd in a kettle of hot water so as to raise the temperature to 100° F. Cook at that temperature for about 20 minutes, during which time stir vigorously with a spoon for one minute at five-minute intervals. At the conclusion of the heating, pour the curd and whey into a small cheesecloth bag (a clean salt bag will do nicely) and hang the bag on a fruit strainer rack to drain. After 5 or 10 minutes, work the curd toward the center with a spoon. Raising and lowering the ends of the bag helps to make the whey drain faster. To complete the draining, tie the ends of the bag together and hang it up. Since there is some danger that the curd will become too dry, draining should stop when the whey ceases to flow in a steady stream. The curd is then emptied from the bag and worked with spoon or butter paddle until it becomes fine in grain, smooth, and of the consistency of mashed potatoes. Sour or sweet cream may be added also, to increase the smoothness, palatability, and flavor. Then it is salted according to taste, about one-quarter ounce to a pound of curd.

GARDEN PESTS.

The Home Gardener Should Make Provision to Combat Insect Enemies and Plant Diseases.

The home gardener must count almost inevitably upon the presence in his garden of plant diseases and pests, says a new Farmers' Bulletin of the United States Department of Agriculture, No. 818, "The Small Vegetable Garden." It is pointed out that if these are not combated they will interfere seriously with yields or destroy the plants.

It is hard for some gardeners to realize the importance of making early provision to combat these enemies of plant life. It can not be too strongly emphasized, however, that such provision is of equal importance with other phases of gardening and that it should under no circumstances be neglected. The wise gardener does not wait for the appearance of insects and diseases, but takes steps to combat them by spraying the plants at reasonable intervals from early spring until his crops have been harvested, or by other protective measures. He thus insures himself against the likelihood of loss.

The necessary implements and materials for protecting the home garden against insects and diseases should be assembled early in the season. These consist of a substantial hand sprayer and the necessary concentrated solutions, which, after dilution with water, are to be sprayed on the plants.

The diseases which affect garden plants may be divided into two groups, parasitic and constitutional diseases. The parasitic maladies, such as the blights, are caused by fungi or germs, and usually may be prevented or controlled by spraying with Bordeaux mixture. Little is known, however, of the so-called constitutional diseases, and little can be done to prevent their ravages. If some malady which does not yield to treatment with Bordeaux mixture manifests itself on isolated plants in the garden, it may be well to pull up these plants and burn them.

The insects which attack garden plants may be divided into two groups—those which eat or chew the fruit or foliage and those which suck the plant juices. Eating insects may be killed usually by spraying poisonous solutions or dusting powders on the plants which they attack. Arsenate of lead is the poison in most general use for this purpose. This substance is poisonous to persons as well as to insects and must be used with care. It should not be applied to vegetables that are to be used soon. All vegetables should be washed carefully before they are eaten, regardless of whether they have been sprayed.

Most of the garden plants may be guarded against disease and at the same time protected from attack by eating insects by spraying at intervals of two weeks with a combination of Bordeaux mixture and arsenate of lead.

Other methods of protecting plants from the larger eating insects are to pick the pests by hand or knock them with a stick into a pan containing water on which a thin film of kerosene is floating. Insects collected by hand should be destroyed promptly. Young plants may be protected by setting over them wooden frames covered with mosquito netting, wire mesh, or cheesecloth. Cutworms may be kept from plants by setting tin or paper collars into the ground around the stalks.

Sucking insects, such as plant lice, can not be killed by poisoning the surface of the leaves and fruit, since they feed by puncturing the plants and extracting the internal juices. Poisons which will kill by contact or substances which envelop and smother the pests are, therefore, employed against the sucking insects. The principal remedies of this sort are nicotine solutions, fish-oil and other soap solutions, and kerosene emulsion.

The accompanying table lists the insects most likely to appear in the vegetable garden and furnishes information in regard to the plants attacked and the treatment recommended.

The gardener should remember that many plant diseases and insects exist in the garden from year to year. At the end of the growing season, therefore, the garden should be carefully cleaned of rubbish, the stems of plants, leaves, etc. It is necessary to burn this débris promptly, as any disease spores or insects which may be present are then surely destroyed.

Principal garden insects and remedies.

Insect.	Plants attacked.	Treatment.
Eating type:		
Tomato worms	Tomato	Hand pick or spray with arsenate of lead.
Cabbage worm	Cabbage group	Hand pick or apply arsenate of lead.
Cucumber beetles	Cucumber	Cover with frames. Apply tobacco dust or spray with Bordeaux mixture or arsenate of lead.
Cutworms	Tomato, cabbage, onion	Apply poison bait; place tin or paper collars around plants; hand pick; apply Paris green or arsenate of lead.
Potato beetle	Potato, eggplant, and tomato	Hand pick and apply arsenate of lead.
Sucking type:		
Squash bug	Squash, pumpkin, melons, etc.	Hand pick; spray with kerosene emulsion or nicotine sulphate.
Aphis (plant lice)	Cabbage group and other plants.	Spray with kerosene emulsion, a solution of hard soap, or nicotine sulphate.

Gardeners desiring additional information in regard to insects affecting the vegetable garden should apply direct to the Bureau of Entomology, United States Department of Agriculture, but it should be understood that there is no publication covering the entire subject. Specimens of insects with some account of food plants and ravages should accompany correspondence.

FOXTAIL MILLET.

Valuable Plant for Use as a Catch Crop—Adapted to Many Sections of the Country.

Foxtail millet, which makes up approximately nine-tenths of all the millet grown in the United States, is declared by specialists in the United States Department of Agriculture to be valuable chiefly as a catch crop. Most farmers use it to overcome a shortage in their hay supply or to occupy a field which would otherwise be idle. For such purposes millet is admirably adapted because it matures quickly and a stand is obtained with ease and certainty.

Furthermore, the plant is adapted to a wide range of soils and climates. Although large yields are not obtained under unfavorable circumstances, millet does better on poor soil and in a dry climate than most other hay crops. In semiarid regions it frequently escapes periods of drought because of its short growing season. On the other hand, it is quick to show the effect of dry weather because of its shallow root system. Compared with Sudan grass, its chief competitor, millet is deficient both in quality and yield of hay but the growing season of the Sudan grass is somewhat longer, and this provides greater opportunity in the latter for injury from drought.

In its feeding value, the hay of foxtail millet has been found to be approximately the same as timothy hay. As a roughage for growing stock, it is usually regarded as somewhat more effective than prairie hay but not the equal of alfalfa or clover hay. It can be fed without danger to cattle and sheep, and sparingly and in connection with other kinds of hay to horses. A continuous ration of millet hay, however, has resulted in injury to horses. This fact, says a new publication of the Department of Agriculture, Farmers' Bulletin 793, has been denied, but it is scarcely open to doubt.

Millet is not to be regarded as a profitable constituent of regular crop rotations. It has been considered exhaustive of soil fertility, possibly because it gathers its food and moisture from the upper levels of the soil. Also, a very small quantity of vegetable matter is left after a crop of millet has been harvested for hay and, therefore, there is little humus added to the soil when the stubble is plowed under. Experience, in fact, has shown that it is quite likely that a crop following millet will not do so well as one following small grain or corn.

In Asia, the original home of foxtail millet, the plant is used to a certain extent as human food. It is quite unlikely, however, says the bulletin already mentioned, that there will be any great demand for it in this country as long as wheat can be produced as abundantly as at present. Proso, or broomcorn millet, has been used to some extent as a grain crop in the Dakotas, but it is less valuable than corn for feeding hogs and beef cattle, and as a flesh producer does not equal barley. The meat produced by millet was found to contain a greater percentage of lean than that produced by other feeds and the fat was softer. When fed as grain, millet seed should always be ground. Millet, however, is used in large quantities as chicken feed and bird feed, and in this case the seed can be used without grinding.

HOW TO SELECT FOODS.

How to Tell Whether the Family Is Getting Enough of Right Kind of Food.

The health and appearance of the family are a good test of the wholesomeness of their diet, according to the United States Department of Agriculture Farmers' Bulletin 808, on how to select foods. If they are strong, well developed for their ages, free from ailments, and full of energy and ambition, one may safely say their food agrees with them. But if they are listless and ailing, or not as well developed either physically or mentally as they should be, and if a competent physician finds that there is no special disease to account for these bad symptoms, a mother may well ask herself if the food is right, and if not, how she can make it so. If a little too much or too little of one nutrient is provided at a single meal or on a single day, a healthy body does not suffer, because it has ways of storing such a surplus and of using its stored material in an emergency. The danger would come if the diet taken week in and week out always provided too much or too little of some one nutrient.

Habit and custom help greatly, because they usually are based on what the experience of generations has proved is wise and healthful, though, of course, there are bad habits and outgrown customs in food as in everything else. Good food habits, it must be remembered, include more than cleanliness and order in everything that has to do with food and meals and leisurely ways of eating. Equally important are a liking for all kinds of wholesome foods, even if they have not always been used in one's home or neighborhood, and eating reasonable amounts, without being either greedy or overdainty. Every effort should be made to train children in such good food habits. If older people have not learned them, they, too, should try to do so, for such things are very important not only to health but also to economy.

To refuse to eat some wholesome dish simply because one is not accustomed to it may prevent the use of some very desirable and economical food. To feel that there is any virtue in providing more food than is needed shows poor taste as well as poor economy.

CUTWORM REMEDIES.

Poisoned-Bran Baits—Ditches, Barriers, or Arsenical Sprays for Extreme Outbreaks.

Tomatoes, cabbages, sweet potatoes, lettuce, and other truck plants, especially those which are started under glass and transplanted, are subject to serious injury by cutworms. These pests appear sometimes in great numbers in the spring and early summer, and frequently do severe injury before their ravages are noticed. Their method of attack is to cut off the young plants at about the surface of the ground, and as these caterpillars are of large size and voracious feeders, they are capable of destroying many plants in a single night—frequently more than they can devour. Every year these insects, working generally throughout yhe United States, have destroyed hundreds of thousands of dollars' worth of crops. By the timely application of remedies, however, as has been demonstrated by entomologists of the U. S. Department of Agriculture, they readily can be controlled, even over considerable areas. The usual method of control is by the use of poisoned baits.

How to Mix and Apply Poisoned Baits.

Take a bushel of dry bran, add 1 pound of white arsenic or Paris green, and mix it thoroughly into mash with 8 gallons of water in which has been stirred half a gallon of sorghum or other cheap molasses. (Arsenic and Paris green are deadly poisons. Handle them with great care.) This amount will be sufficient for the treatment of about 4 or 5 acres of cultivated crops. After the mash has stood for several hours, scatter it, in lumps about the size of a marble, over the fields where the injury is beginning to appear and about the bases of the plants set out. Apply late in the day, so as to place the poison about the plants before night, which is the time when the cutworms are active. Apply a second time, if necessary. Keep children, live stock, and chickens away from this bait.

What to Do When Cutworms Travel Like Army Worms.

When cutworms occur in unusual abundance, which happens locally, and sometimes generally, they exhaust their food supply and migrate to other fields. This they do literally in armies, assuming what is called the army worm habit. At such times it is necessary to treat them the same as army worms. While the methods which have been advised are valuable in such cases, they may be too slow to destroy all the cutworms, and other methods must be employed. These include trenching, ditching, the plowing of deep furrows in advance of the traveling cutworms to trap

them, and the dragging of logs or brush through the furrows. If the trenches can be filled with water, the addition of a small quantity of kerosene, so as to form a thin scum on the surface, will prove fatal to the cutworms. In extreme cases barriers of fence boards are erected and the tops smeared with tar or other sticky substances to stop the cutworms as they attempt to crawl over.

Spraying with Arsenicals.

In extremely severe attacks by cutworms on choice plants there is sometimes no opportunity to prepare the poisoned bait. In such cases an arsenate of lead spray will answer quite as well. In one instance a parsley field was sprayed with 4 pounds of arsenate of lead to 50 gallons of water; this killed all the cutworms, whereas if they had been left alone for a day or two longer the field probably would have been destroyed. The result was a perfect stand—the best ever made by the grower. In this case five applications were necessary.

Cultural Methods and Crop Rotation.

Clean cultural methods and crop rotation are advisable, as are also fall plowing and disking, to prevent recurrences of cutworm attacks.

Many cutworms can be destroyed where it is possible to overflow the fields, particularly where irrigation is practiced.

GARDEN CULTIVATION.

Never Permit Soil to Become Baked or to Form a Crust.

The importance of thorough and continuous cultivation in the home vegetable garden is pointed out in a new Farmers' Bulletin of the United States Department of Agriculture, No. 818, "The Small Vegetable Garden." After the seeds have sprouted or after the plants have been set in their permanent location, continued cultivation becomes necessary.

The gardener should never permit the surface of the soil to become baked or even to form an appreciable crust. Constant stirring with hand tools or a wheel cultivator should be practiced between the rows and about the plants. Such a stirring permits the air to penetrate the soil, where it facilitates chemical action and bacterial activity, destroys weeds which otherwise would utilize large amounts of plant food, and, finally, conserves the moisture supply. The rake is perhaps the gardener's most valuable tool in cultivating. This can be passed backward and forward over the ground until it is in an open, mellow condition. Where vegetables grow closely in the rows it often will be necessary to supplement the cultivation by hand weeding. Small implements are made for this purpose, and may be purchased cheaply. It is well also in some cases to pull up weeds by hand, especially where they grow closely about the stalks of the garden plants.

Stirring the Soil after Rains.

Just as the gardener should be careful in early spring not to dig the ground when the soil is too moist, so he should be careful later in the season not to cultivate too soon after rains. The stirring of very muddy soil "puddles" it into a compact, cement-like mass in which the plant food is securely locked. The garden will require attention, however, as soon as the excess moisture from a rain has soaked in or partially evaporated. Unless the ground is stirred at this time a crust will form almost inevitably. Such a crust, besides restricting the plants, prevents the access of air, and also facilitates the loss of moisture through evaporation.

Irrigation.

When, during prolonged dry spells, the plants give evidence of suffering because of the lack of moisture, water must, if possible, be supplied artificially. Where a supply of piped water is at hand, perhaps the most usual method of irrigation is by sprinkling with a hose. If sprinkling is practiced it should be done late in the afternoon. It is not sufficient merely to dampen the surface; a thorough wetting should be given. A more satisfactory and more economical method of irrigation, however, is to open small furrows between the rows of growing plants and to supply water in these ditches from a hose or pipe. Several hours after the water has soaked in, the dry earth should be drawn back into place.

Sorrel can easily be destroyed by a short rotation of crops. If possible, the rotation should be arranged so that the soil will be cultivated at a different season each year. Corn or other intertilled crops are especially useful for killing sorrel if planted in check-rows and cultivated with a spike-tooth cultivator. Either buckwheat or common millet, sown in June, allows spring and early summer cultivation and produces a dense shade during the later months of the year. Grain fields should be harrowed immediately after harvest and again at intervals during the rest of the season so that sorrel will not go to seed in the stubble.

For some reason boiled parsnips were long considered in some regions of Europe to be the proper vegetable to serve with salt fish, but this tradition is not followed in the United States, plain boiled or fried parsnips being commonly served with roast meats of any sort. They are also used for soups, for fritters, and so on.

FLOODED CORNFIELDS.

How to Handle the Large Area of Good Corn Land Which is Subject to Overflow.

In the United States there are more than 10,000,000 acres of good corn land subject to overflow. The greater portion of this yearly is planted to corn. No other crop is better adapted nor so generally grown on this land as corn. Twenty times as many acres of corn are subject to destruction by floods as are planted in the whole of New England. The amount of land subject to overflow, but otherwise admirably suited to corn, and the greater part of which is yearly planted to corn, exceeds the combined area of New Jersey and Massachusetts.

When droughts cause corn on the uplands to fail, the river bottom lands usually supply good yields. Fortunately only certain sections are visited each year by spring and summer floods. Not knowing beforehand what section will be flooded, it is the patriotic duty of those farming river bottom lands to have in readiness suitable seed corn for planting overflowed lands as soon as the floods subside. When the floods occur in the spring the plantings should be made with home-grown seed, as it usually produces better than imported seed. When the floods occur as late as June, it will be advisable to plant early maturing varieties, seed of which is plentiful this year and can be obtained from the seed-corn men and seed dealers of the Dakotas, Minnesota, Iowa, Wisconsin, Michigan, and New York.

Where there are three months or more of good growing weather remaining after the water leaves the land, such varieties as Leaming, Iowa Silver Mine, Silver King, 100 Day Bristol, 90 Day Dent, 90 Day Flint, etc., should be planted. If less than 90 days of corn-growing weather remain, such varieties as Pride of the North, Rustler's White Dent, Minnesota No. 23, U. S. Selection No. 133, Northwestern Dent, North Dakota White Flint, etc., should be planted.

This seed is obtainable now and will hold its powers of germination and productiveness for three or four years. It is therefore advisable that all who have crops liable to destruction by floods should obtain now and maintain a suitable supply of seed for prompt planting in case of high water. Experience has shown that if such seed is not on hand when the floods come, it is seldom possible to make timely plantings. Those who sell seed usually have disposed of their surplus by the time the general corn planting is completed. Obtain seed now and be prepared.

C. P. Hartley,
In Charge of Corn Investigations.

CLOVER SEEDING.

Department Urges that Every Precaution Be Taken to Prevent Failure of the Crop.

While clover to be seeded with winter grain is already in the ground, and a considerable acreage is annually put in with oats, the United States Department of Agriculture calls attention at this time to the need for using every care to get a stand of clover. Red clover seed is high in price now and there is no reason to think that considerable importations from Europe can be looked for during the coming year. It is highly desirable that the failure of clover seedings be minimized as much as possible, both from the standpoint of conserving our seed supplies and of assuring a satisfactory hay crop for the year 1917–18. The following suggestions are therefore made at this time when land is being prepared for seeding oats.

(1) Use of Lime.

Many fields, especially in the East, are benefited by lime. The application of lime alone will not always insure a catch of clover, but on the greater part of the farms on which clover frequently fails, lime may be applied profitably. Probably at least half of the clover failures could be prevented were plenty of lime used. The kind of lime to be used will depend on the price, freight charges, and cost of hauling. This is assuming that it is all of good quality. Roughly twice as much ground limestone must be applied as of burnt lime and where freight and hauling charges are high, the smaller quantity to be handled may make burnt lime cheapest. The State experiment station or the county agent can best advise in particular cases.

The use of lime in some form when preparing the land for oats with clover is urged as an important step toward assuring a stand of clover.

(2) Use Early Variety of Oats.

Use an early variety of oats and do not seed heavily. The oat crop is hard on the clover growing with it in that it shades the latter and draws heavily on the supply of moisture. Oats are harvested during hot weather and droughts are not unlikely at that time. It is at this time that the greatest mortality occurs among the young clover plants. If the stand of oats is thick, there is more shading and there is also a greater draft on the water supply. To minimize the chances of loss of a catch of clover, use an early oat and sow relatively thin. A bushel of oats per acre may not give quite the yield that 2½ bushels will, but there is twice the chance for the clover, and where this is seeded, it is important enough to be given a fair show.

(3) Handling the Oats.

If oats have been seeded thickly and the season turns dry it will be worth while to consider whether the oat crop would not better be cut for hay than to be allowed to mature. Oat hay is good hay and the clover will certainly have more chance if the oats are cut in the dough than if they are allowed to ripen. Of course, each farmer must balance the arguments for himself in each case, but in deciding he should give due weight to the importance of the stand of clover.

(4) Alsike Clover with Red.

Sowing some alsike clover with the red is practiced a great deal and is a good partial insurance. The alsike will often catch on poor or sour spots where the red will not and this makes the field more uniform. Sometimes, indeed, a field of this sort comes out pure alsike, when, if only red had been seeded there would have been no stand. This is especially true of low lands that may be overflowed or drowned out in a wet year. Red clover will not stand such conditions, but alsike will. A seeding of 4 pounds of alsike with 8 pounds of red makes a good amount for an acre.

ALFALFA SEED WARNING.

Commercial Turkestan Alfalfa Seed not Adapted to General Use in United States.

Commercial Turkestan alfalfa seed, which formerly came to this country through Europe, is now being imported into the United States by the way of Vladivostok and the Pacific Ocean. Since July 1, 1916, two and one-half million pounds have been imported, or enough to seed 125,000 acres. Under most conditions it is decidedly inferior to American-grown strains, and no farmer should sow it thinking he is using American-grown seed. The following statements show how Commercial Turkestan alfalfa is regarded by experts of the United States Department of Agriculture:

"Generally speaking, Commercial Turkestan alfalfa has proved to be inferior to the American-grown strains in nearly every case where comparative tests have been conducted. In the eastern half of the United States, where alfalfa seed is not produced in commercial quantities, imported seed was used almost exclusively until within the past few years. Of the several million pounds of alfalfa seed that have been imported annually, approximately 95 per cent came from Turkestan. This fact is responsible for many of the failures that occurred with alfalfa in the Eastern States. In brief, the Commercial Turkestan alfalfa yields less than the American-grown strains, is shorter lived, and is less hardy than the Grimm, Baltic, and Canadian Variegated. It is therefore not a desirable variety."

Commercial Turkestan alfalfa seed can be readily distinguished from that of other strains by the presence of seeds of Russian knapweed.

The latter are slightly larger than alfalfa seeds and can not be entirely removed by any known method of recleaning. Their chalky-white color makes them especially conspicuous, and their symmetrical form, being slightly wedge shaped, serves to distinguish them from the notched seed of other similar weeds, which often occur in Italian and other alfalfa seed. As the seeds of Russian knapweed are not usually abundant, a small trade sample should never be used to determine whether the seed is Commercial Turkestan alfalfa. It may often happen that a number of small samples, such as are usually supplied by the trade, contain none of these seeds, while an examination of the bulk will show them to be present. If any seed of Russian knapweed occur, the alfalfa seed is wholly or in part from Turkestan.

The Seed Laboratory, United States Department of Agriculture, Washington, D. C., will examine half-pound samples to determine their possible Russian Turkestan origin, or small samples of imported seed containing the characteristic seeds of Russian knapweed will be sent on request.

Further information concerning Commercial Turkestan alfalfa will be found in United States Department of Agriculture Bulletin No. 138, "Commercial Turkestan Alfalfa Seed," and in Farmers Bulletin No. 757 "Commercial Varieties of Alfalfa."

In pasture lands that can not readily be plowed the best procedure is to apply lime, if needed, and to encourage the grass to grow vigorously by a yearly topdressing of well-rotted barnyard manure and occasional light applications of commercial fertilizer that is rich in phosphates and nitrogen. In addition, all thin spots in the sod should be reseeded each year with a liberal quantity of good grass seed.

Approximately 20 per cent of each potato pared by ordinary household methods is lost in the process. The loss includes much and sometimes all of the portion of the tuber containing important soluble salts. Potatoes that are boiled and baked in their skins lose practically none of their food value.

SALAD PLANTS.

Many Wild Plants May Be Cooked for Greens or Used in Salads—Methods of Preparation.

Many of the wild plants that accompany the advent of spring can be used advantageously in the household. Before modern methods of marketing, storing, and preserving made it possible to have vegetables throughout the year, these plants were eagerly sought for by housekeepers to furnish relief from the monotonous winter fare. Even now they will form a welcome change, and, above all, they may be had for the trouble of picking, as substitutes for purchased greens.

Foremost among these plants is the dandelion. Its use as a vegetable is so common that it is sold in many city markets. Occasionally it is cultivated by market gardeners, but much more frequently the plants sold are wild ones, and ought to cost less than cultivated greens. When some one in the family can dig them near home, there can be no doubt as to the economy of using them. If they are taken from the lawn, there is the further advantage of removing a troublesome weed—providing always that the digging is carefully done. Only the dandelion should be pulled, not the grass around it, and the root should be removed, not broken off at the top, else several crowns of leaves may grow in the place of one. As in most stem and leaf vegetables, the texture and flavor are both best when the plants are young.

Growing as they do close to the surface of the ground, dandelion greens are likely to be full of earth and grit, and must be carefully washed and rinsed in several waters. The water in which they have just been rinsed should never be poured out of the pan over the greens, but the greens should be lifted out of the water, so that the dirt which has settled to the bottom may not get back on the leaves, and for the same reason the cooked "greens" should be lifted out of the water in which they are boiled.

The most common way of using dandelions is as a potherb, or greens. As with most green vegetables, it is a mistake to cook them more than is needed to make them tender. If they are boiled with one-eighth teaspoonful (level) of cooking soda to each quart of greens used, they will keep their color better. Young dandelions may also be used uncooked as salad, a custom less common in this country than in Europe, where the tender plants are sometimes blanched like asparagus. If more dandelions are available than can be used while they are fresh, they may be preserved for future use. They may be canned by the method used by the canning clubs for spinach, or they may be "put down" in salt, according to a household method. In many homes it is a common practice to preserve dandelion greens with salt in stone crocks, putting in first a layer of greens, then a layer of salt, then more greens, and so on, until the crock is filled. The dandelions are then covered with a close-fitting plate or board, on which a weight (a clean piece of marble or a stone) is placed to keep the greens packed solid.

Other wild plants used as potherbs are curly dock, pigweed or lamb's quarters, chickweed, mustard shoots, purple milkweed shoots, young horse-radish leaves, marsh marigold (sometimes called American cowslip), poke sprouts, pepper cress, purslane or "pusley," and in the Southwestern States some sorts of cactus leaves and stalks. If the bitter or acrid flavor is too strong, as is frequently the case with horse-radish leaves or poke sprouts, for example, it may

TO ALL WHO CAN PRODUCE OR SAVE FOOD.

Dr. Beverly T. Galloway, Assistant to the Secretary of Agriculture, and in charge of the department's emergency measures for dealing with the agricultural situation, has issued the following statement:

"The following letter issued by the British Premier, David Lloyd George, while addressed to the people of England, conveys advice distinctly applicable to the United States and which should be heeded by every one who can do anything to produce food or save food from waste:

10, Downing Street.
Whitehall, S.W.

March 5th, 1917.

Dear Sir,

We have now reached a crisis in the war when to ensure victory, the heroism of our armies at the Front must be backed by the self-sacrifice and tireless labour of everyone at home. To this end the production of each quarter of wheat and oats, and of each bushel of potatoes is of vital importance. The work of the next few weeks must decide the harvest of the year; and in the nation's interest I urge you, at whatever personal sacrifice, to overcome all obstacles, to throw your fullest energies into the work, and to influence and encourage all who assist you, so that every possible acre shall be sown.

The imperative demands of the war, have made it impossible to avoid calling up men fit for active service, even though skilled in farming. As far as possible this is being met by bringing on to the land men and women from other industries. They cannot be expected to do work equal to that of men expert in agriculture; but there is no time for delay and the Government is confident that Farmers will at once step forward and do all in their power to utilise their services to the best advantage.

The farmers of this country can defeat the German submarine and when they do so they destroy the last hope of the Prussian.

Yours faithfully,

D Lloyd George

be lessened by changing the water once or twice during cooking. Rightly cooked, all of the plants mentioned are harmless. Marsh marigold is sometimes said to be harmful, but this is not the case with the cooked greens.

A little later in the season a few other potherbs appear, which, though cultivated rather than wild, are so seldom utilized that to use them means as much saving as if no care had been spent to raise them. Among these are the tops of turnips, radishes, beets, and onions, all of which may be cooked like spinach or dandelion. The onion tops should be cut up into inch lengths before cooking. They are excellent served on toast. Cabbage sprouts are also a favorite when they are obtainable.

There are also a few salad plants to be had for the picking. Like all food materials eaten without cooking, they must be very carefully washed before using. Water cress is perhaps the one most generally known. It is also cultivated. It should never be eaten if it has been grown where there is any chance of contamination from typhoid fever or other disease. This is true of any vegetable that is uncooked, but must be remembered especially in connection with plants growing near water, since the latter may have carried the disease germs a long way from the place where the illness was. Pepper grass or pepper cress is another wild plant useful for flavoring other salads, if too sharp to use alone. Sorrel may also be used to give a pleasant acid taste to lettuce or other mild-flavored salads, though the ordinary wild kind is too sour to use in quantity as a potherb like the varieties cultivated for that purpose.

Of plants cultivated in the flower garden the leaves and unripe seeds of nasturtiums may be mentioned as a seasoning for salads.

The name "salsify" is applied to three distinct vegetables; the common white salsify, known also on account of its flavor as oyster plant or vegetable oyster, black salsify, the Schwarzwurzel of the German, and the so-called Spanish salsify. Since the salsifies are not injured by mild frosts, they may be left in the ground until late winter or early spring.

When for any reason alfalfa turns yellow it should be cut immediately and removed from the field. A careful examination at such a time may indicate a lack of effective inoculation, disease, or the need of lime. Yellowing sometimes occurs, however, when all of these conditions are apparently favorable to the growth of the alfalfa.

Winter plowing is useful against almost all weeds having perennial roots.

SPRING ROAD WORK.

Keep Drains and Side Ditches from Becoming Clogged—Good Time to Use Road Drag.

In maintaining an earth road in tolerable condition for spring traffic, the most important thing, say specialists in the United States Department of Agriculture, is to get the water away from the road and to keep it away. To get the best results, this should be done all through the fall and winter. But, in any event, it will pay the county in the early spring to have the road man go over the road daily to see that drains and side ditches do not become clogged. It is at this time also that the road drag can be employed to the best advantage. By clearing a roadway of slush and melting snow, it will prevent the water from soaking into and softening the subgrade.

This work is especially important if the road has been neglected through the winter. Soil saturated with water expands greatly when it freezes. When it thaws out again it has not only lost practically all its power of sustaining the weight of traffic, but it also is in a condition that enables it to absorb water readily and form mud.

Mudholes, in fact, are the cause of most of the trouble on clay or gumbo roads. To get rid of them, the first step is to dig a trench to the side and allow the water and mud to drain off. If necessary, the side ditches should be opened also. After this all of the soft mud left in the hole should be removed and the bottom of the trench filled with broken stone or coarse gravel in order to provide a drain that will prevent the further accumulation of water. Gravel, if available, is the best material for filling the old mudhole. If none can be obtained, the best earth on hand should be tamped down in 3 or 4 inch layers. To attempt to fill a mudhole by throwing in large stones is fatal. It simply results in two mudholes instead of one. It is useless, too, to attempt to fill a hole without first draining out the water and removing the soft mud. The use of sods or similar material which absorb water readily is a waste of labor.

On earth or gravel roads ruts are best treated with the drag. The rainier the weather the more often the road should be dragged. A liberal use of the drag with a thin coat of sand or gravel spread over the surface when softened by rain will frequently put a poor earth road in such a condition that it can carry heavy traffic for a short time.

On the other hand, sand roads give less trouble in wet weather because the moisture tends to hold the separate grains of sand in place.

In addition to the pressing need for proper maintenance in order to keep earth roads passable under the unfavorable conditions frequently encountered at this time, road work is desirable in the early spring in order that the road may become thoroughly consolidated before the dry summer weather comes.

As has been pointed out, the addition of clay or gumbo to sand roads and the addition of sand to clay or gumbo roads improves the highway very materially. If this work is done during moist weather the materials combine much more quickly. Again, if grading is put off until later in the season, the road will become very dusty in dry weather and will need additional attention later in the fall.

FOOD FROM SMALL AREAS.

Detailed Discussion of the Ways in which a Little Land Is Made to Produce Many Vegetables.

The best methods to follow and the best crops to grow in order to make a small area like a back yard produce the maximum amount of food for the family are discussed in a new publication of the United States Department of Agriculture, Farmers' Bulletin 818, The Small Vegetable Garden. In addition to furnishing information in regard to the fundamental principles of gardening, this bulletin describes in detail the culture of all of the common garden plants, and also furnishes a table showing in a concise form the quantity of seed needed for each kind of vegetable, the proper way and times to plant, and the material required to produce the crop.

To make a small area produce a large amount of food, the bulletin points out that not only every foot of available space must be utilized, but that late or succession crops must be planted as soon as the earlier plants have been removed. To carry on gardening in this intensive way requires careful planning in advance, and it is recommended that a detailed diagram of the garden be drawn up and the various uses that it is planned to put each portion to throughout the growing season be clearly indicated. On this plan the success or failure of the various enterprises should be noted and the plan itself kept as a guide for the following year.

Mowing pasture lands when the weeds are in full bloom is an excellent practice, as it prevents the formation of weed seeds. Most weeds, even of the perennial type, can gradually be brought under control if they are not allowed to produce seed for several years in succession.

ABANDON FOOD PREJUDICES

Don't Be Finicky

Be willing to try new foods. Certain plentiful and nourishing foods widely used and enjoyed in one section are practically unknown in other sections of the country. Learn to know ALL the good things; not a few only.

People too easily get into food ruts—insist on eating only the food they are used to and refuse to give a fair trial to others. This causes undue demand for certain staples, with resulting scarcity or high prices when crops are short. At the same time other valuable foods may be relatively cheap and available. A striking instance of this is failure fully to appreciate rice—a valuable source of starch—when potatoes are scarce and high. Another example is refusal in certain sections to use anything but wheat as a breadstuff when corn—a valuable cereal widely used elsewhere as a breadstuff—is plentiful and relatively cheap.

Cook Food Properly

Learn how to cook all kinds of staple foods and to serve them in a variety of ways. Simple dishes well prepared are better than expensive foods badly cooked.

Many persons are prejudiced against certain good foods because, when first tried, the foods were improperly cooked or prepared.

Remove from your vocabulary "don't like" or "can't eat."

Most individual prejudices against widely popular foods are either imaginary or baseless.

Try to like every simple food; give it a fair trial.

DEMONSTRATE THRIFT IN YOUR HOME

MAKE SAVING, RATHER THAN SPENDING, YOUR SOCIAL STANDARD

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C,, MAY 2, 1917. No. 39

FOOD PRODUCTION REPORT SUBMITTED TO THE SENATE.

The Secretary of Agriculture Submits Proposals for Increasing Production, Improving Distribution, and Promoting Conservation of Food Supplies—Outlines Organization for Carrying Out These Purposes.

In compliance with Senate resolution No. 26, adopted April 6, 1917, the Secretary of Agriculture, on April 18, submitted to the Senate the following report:

DEPARTMENT OF AGRICULTURE,
Washington, April 18, 1917.

The PRESIDENT OF THE SENATE.

SIR: I take pleasure in complying with the request of the Senate embodied in Senate resolution No. 26, to submit a comprehensive plan for increasing the production of food supplies, especially by the cultivation of town lots and unused lands adjacent to towns, and of the arid or semiarid lands, and by promoting the raising of all classes of food or food-producing animals, and for the creation of an organization to promote and in a practical and effective way carry out the purposes aforesaid, together with an estimate of the amount of moneys necessary to be appropriated by Congress for the promotion of these purposes.

This department has for some time been giving careful consideration to all the matters covered by the resolution. It has issued a number of statements designed to stimulate increased production and to indicate what crops should receive particular attention in the different areas and the best methods to be employed to secure increased efficiency. It has also laid special emphasis on the need of conserving the food supply through better handling, through the elimination of waste, and through economy, especially on the part of the well-to-do. At recent conferences of official bodies, including the commissioners of agriculture or representatives of State boards of agriculture and representatives of the land-grant colleges, called by the department at St. Louis, Mo., and Berkeley, Cal., problems of production, conservation, distribution, and organization were fully considered and important conclusions were reached. These conclusions were embodied in a report, a copy of which is attached hereto, marked "Exhibit A." (See "Program for Food Production and Conservation," in Weekly News Letter of April 25, 1917.)

Organization.

In the Federal Department of Agriculture, the State departments of agriculture, and the land-grant colleges, the Nation already possesses official organized agencies which, for many years, have been actively studying all agricultural problems. These agencies are working in very close cooperation and are actively directing their energies to the handling of problems presented by this emergency. The Nation is also fortunate in possessing many important farmers' organizations, such as the Grange, the Farmers' Union, the American Society of Equity, the Gleaners, the Farmers' National Congress, the American National Live Stock Association, the National Wool Growers' Association, and many others. It is believed that additional machinery should be created, and steps already have been taken to develop it along these lines:

(1) As special developments and particular problems demand it, the Secretary of Agriculture will call to his assistance in Washington a few men of special training and broad experience who may advise with him in further projecting the activities of the department, in keeping in touch with the problems and machinery over the Nation, and in promoting particular large activities. It would seem desirable that this body should take shape as circumstances require, and that the department should have funds available to meet any necessary expenses in connection with the services of such a body. Through its regular machinery and through this small advisory body the department will undertake to keep in touch not only with State agencies but also with the great farmers' organizations of the Nation, whose assistance and cooperation and the advice of whose leaders will be constantly sought.

(2) The creation in each State, either separately or, preferably, in connection with the State council of safety, of a small central division of food production and conservation, composed of representatives of the State boards of agriculture, of the land-grant colleges, of such farmers' organizations as the Grange, the Farmers' Union, the American Society of Equity, the Gleaners, the Farmers' National Congress, and others as may exist in a particular State, and of bankers' and business agencies. In a number of the States these central bodies already have been created and others are being rapidly formed.

(3) County, township, or urban bodies of similar constitution, working in close cooperation with the State central agency, to study and deal with problems of food production and conservation.

Production.

The increase of food production this year must come about largely through increased efficiency on the farms and ranges already in operation. This is not a time for experiment in new areas and with new or untried crops and processes. Concentration of effort should be made in areas already developed and on enterprises already under way. The problem is not that of securing more land to cultivate. The difficulty confronting the farmer is rather that of securing an ample supply of labor. In fact, one of the principal limiting factors in food production this year may be a restricted labor supply. In many sections of the West and South, the supply, relatively speaking, will not fall far short of normal. The effect will be felt more in the Northeast, in the neighborhood of the great industrial centers.

It will be impossible to secure a large army without some further disturbance of labor. Agricultural operations not only must be maintained at their normal level but must be extended. This can be accomplished only by making the labor remaining on the farms more efficient and by drawing into the field forces not heretofore regularly or fully used. The time of special stress will be during the harvest season, and every step should be taken by the State and Federal agencies and organizations to furnish relief when it is needed. I am not yet prepared to submit a definite or satisfactory suggestion, but the problem is receiving the earnest consideration not only of the Department of Agriculture and the Department of Labor, but also of State and local agencies throughout the country. A joint committee of the Department of Agriculture and of the Department of Labor is actively studying the matter and a number of suggestions are under consideration. In the South the existing labor supply can be more fully utilized through increased agricultural diversification. At present the South's agriculture is based largely on the two-crop system—cotton and corn. It has been estimated that in some sections, because of too exclusive reliance on the two-crop system, the labor of man and animals is utilized only 50 or 60 per cent of the time. If diversification were more generally practiced, this labor would be more effectively and economically applied. It is stated that there are more than 2,000,000 boys between the ages of 15 and 19 years in cities and towns not now engaged in productive work vital to the Nation in the present emergency. Many of these boys have had contact with rural life and know something about farming operations. This constitutes the most important unorganized and unutilized labor resource available. The department and the State agricultural colleges have, in the boys' and girls' clubs, more than 300,000 members. Large additional numbers could be enrolled in these clubs, and their services could be utilized in additional directions. It has been suggested also that high schools and colleges in rural communities might suspend operations

before the end of the regular terms and might resume their activities later in the fall. This would be a possible means of addition.

Other suggestions worthy of serious consideration are that industrial plants should, so far as possible, arrange to do their repairing during the harvest season and that certain kinds of public and private undertakings of relatively lesser importance should be suspended temporarily, thereby making possible some additional liberation of labor. The mobilizing in particular districts of groups of labor for emergency assistance is by no means beyond the range of possibility. State and local organizations especially should give this problem their most earnest consideration, and no doubt they will find means in their various communities of furnishing assurances that farming operations will not only be continued on their normal scale, but will even be extended.

The department, through the Office of Farm Management, will undertake to place a competent man in each State to keep in touch with the State's central board of food production and conservation to assist it in devising the best means of furnishing relief to communities that need additional labor. Through the State boards, this representative will keep intimately in touch with the local organizations. A special effort will be made to ascertain the labor needs of the different communities and the available supplies of labor not fully utilized in the region, and also to ascertain these facts over large areas. The stress comes at different times in different States and communities. Information will be conveyed to the boards in States where there is a lack of labor regarding surplus labor supplies in surrounding States or districts. The problem of securing favorable transportation facilities and rates will be taken up with the various transportation companies. This department will cooperate also with the Department of Labor and keep in touch with its field agencies.

It is especially important that emphasis be laid on the increased production of the staple crops, particularly in the regions where they are usually grown. There is yet time to increase the acreage not only of corn, oats, barley, rice, and the sorghums, but also of spring wheat in certain areas, as well as to extend the acreage of peas, beans, cowpeas, and soy beans. The live stock and poultry resources of the country need to be carefully considered and encouragement given to permit recovery from the unusual drafts upon them during the past year, with particular reference to the production of meat, dairy products, and eggs. The marked activity in home gardening will result in a considerable additional production of perishable crops for local use. The department and State agricultural agencies are lending their assistance to local bodies which are organizing systematic home garden work.

Further to stimulate production, to improve distribution, and to promote conservation, the following recommendations are offered:

(1) Prompt enlargement of the cooperative demonstration forces of the department and the States, through the States Relations Service, to insure the most effective instruction with reference to crop and animal production and the economic and effective use of food in the home.

(2) Immediate enlargement of the existing force of experts in home economics in order that widespread instruction may be given in urban and rural communities regarding the proper preparation and economic utilization of foodstuffs. Some of the greatest preventable wastes are in the home. The women, and particularly the housekeepers, of the Nation can be of great assistance not only in increasing the production of foodstuffs along certain lines, but especially in the conservation of food, the elimination of wastes, and, particularly in the case of the well-to-do, in practicing rigid economy. The women of the Nation have control of the larger part of its consumption expenditure, and one of their first tasks should be to see that this is directed in the most efficient and economical manner.

(3) Prompt enlargement of the department's forces and facilities for aiding farmers to combat destructive insects and diseases of both animals and plants, through instruction and assistance to the general extension workers of the department and the States. The losses through animal diseases and insects run into the millions. With effective and efficient organization the forces in the department already engaged in work of this kind could be greatly enlarged and utilized. This undoubtedly would result in the saving of great quantities of food materials that now go to waste.

It is estimated that the flour supply, on the basis of a normal crop, could be increased by 18,000,000 barrels a year through the milling of wheat so as to make 81 per cent of the kernel into flour instead of 73 per cent as at present. The problem, however, has many sides and various important issues are involved. How far the increased milling should be pressed and how rapidly are important questions to be considered. Such action as the results of further inquiry may determine should be promptly taken.

Some of the European nations have secured a considerable addition to the food supply either by reducing the production of malt liquors or by reducing or prohibiting the production of distilled liquors. It has been roughly estimated that the value of food materials entering into the manufacture of alcoholic beverages in this country in one year, on the basis of prices lower than those now prevailing, is approximately $145,000,000.

(4) Immediate enlargement of the department's forces dealing with the conservation of perishables on farms and elsewhere to prevent losses of useful food crops which occur through insufficient supplies of cans and containers to meet the requirements.

(5) Safeguarding of seed stocks for 1918 in case untoward climatic or other conditions affecting important crops make such action necessary in restricted regions. It would be impracticable to undertake to supply seed in a nation-wide way for all or any of the great staple crops. The most that could be done in any event through Government agencies would be to supply seed in restricted areas where serious emergencies have presented themselves. If the Congress should provide an emergency fund, the Secretary should be authorized to furnish, in a limited way, relief as indicated, and, if deemed advisable, to take steps to locate, secure, and store for next year good seed for at least a portion of certain staple crops. Such seed would not be furnished free but at cost, and any funds expended for this purpose would, in large part, be returned to the Treasury.

Distribution.

The plans outlined involve problems of food production only. No less important than increased production is the establishment of satisfactory and efficient arrangements for distribution. The producer of foodstuffs is entitled to assurances that the channels of distribution will be open and that a free, competitive, and unmanipulated market will exist, and the uneconomic speculation will be either controlled or prevented. To meet this situation the Department of Agriculture should be given the following authority and power:

(1) To make a complete survey of the food supply of the Nation, with a view to secure full information as to its location, ownership, and where it is needed, and complete knowledge as to the instrumentalities and agencies that own, control, manufacture, and distribute food products.

(2) After investigation, and in cooperation with the trade interests involved, to establish market grades and classes of farm products, including seeds, and standards for receptacles for such products, together with authority to effect a suitable degree of supervision of their application through such inspection service as may be necessary.

(3) To license and supervise the operation of all plants, mills, packing houses, canneries, slaughterhouses, breweries, distilleries, storage houses, or other establishments or factories in which food or feeds, agricultural implements and machinery and materials therefor, fertilizers, insecticides, fungicides, serums, toxins, viruses, and any other articles required for agricultural purposes are prepared, manufactured, or kept for sale or distribution. This power should include authority to make rules and regulations governing the use and operation of such enterprises, including the taking over and operation of them whenever such course may be necessary in the public interest.

(4) To require the preference movement by the common carriers of the United States of seeds, fertilizers, insecticides, fungicides, and farm implements or machinery, or the materials required in their manufacture.

(5) To enlarge the existing telegraphic market news service of the department, which now covers live stock and meats and certain foods, vegetables, and other perishables, in order to assist, by securing comprehensive information from all shipping areas, in the distribution of products according to the proportionate requirements of the consuming centers. Enlargement of this service would also tend to prevent undue shortage in any consuming center and provide against wastes due to temporary oversupply of perishables in particular communities. The service would further assist in securing direct routings and thereby relieve, to some extent at least, congestion of transportation lines. It would also directly aid farmers by furnishing information which would put them on an equality with buyers and enable them to consign unsold products to points where there is the greatest need for them.

(6) In case of extreme emergency, the Government should have power to purchase, store, and subsequently dispose of food products to groups of people or communities organized in some form, and to fix maximum or minimum prices. Perhaps the exercise of this power should be lodged in the Council of National Defense, to be used only when directed by the President. It is possible that the mere existence of the power would make action unnecessary. The Government should have full discretion in the matter. It might be wise to fix a minimum price to producers for only one important commodity, just as it might be wise to fix a maximum price which consumers might be expected to pay for only one or several products.

(7) I greatly need one, possibly two, more Assistant Secretaries, and such number of assistants to the Secretary as the circum-

stances may demand. At present there is only one Assistant Secretary. The work of the department has increased enormously in the last few years. It had greatly extended before the European war broke out and within the last three years it has been charged with the duty of administering a number of very important laws, including the following: (1) Cooperative agricultural extension act; (2) cotton futures act; (3) United States grain standards act; (4) United States warehouse act; (5) Federal aid road act. I need not set forth the burdens which have been placed upon the central office because of the present emergency. They are vast and complex and it is urgently essential that additional assistance be provided. Furthermore the appeals from different sections of the Union for responsible representatives who can keep intimately in touch with them and furnish advice and suggestions are numerous and growing.

It is estimated that approximately $25,000,000 will be required to carry out the plans outlined herein. In order that prompt steps may be taken to put them into effect it is urged that immediate action be taken to give the department the requisite authority and to make available the necessary funds.

Respectfully,

D. F. Houston
Secretary.

FIXING OF FOOD PRICES.

The Secretary of Agriculture, in response to a telegram regarding the fixing of prices of food products, to-day (Apr. 24) made the following reply:

"Your telegram received. No agency now has power to fix prices of food products. Have suggested that Congress confer power on the Government to fix minimum and maximum prices if the emergency requires them. The object of a minimum price to producers would be to stimulate production of certain staple products by assuring farmers that these products would not be disposed of below a certain level which would give them a reasonable return and would not cause them to suffer loss in any event. This would have to be done under proper regulation. The shortage of important crops in this nation, the greatly depleted resources abroad, and the waste and destruction in Europe should cause a continuance of remunerative prices, but as an additional assurance to farmers the power indicated ought to be vested in the Government. It is not suggested that maximum prices be fixed to producers, but that power to fix such prices governing the distribution of products be given to the Government to be used if necessary to control uneconomic speculation and manipulation in the handling of food products. It is of the first importance that no step be omitted greatly to increase the supply, especially of the great staple food products of the United States, in every direction."

INCREASE CORN YIELD.

Secretary of Agriculture Urges Farmers to Use Utmost Efforts for Maximum Production.

The Secretary of Agriculture, on April 18, issued the following statement:

Corn is America's most important cereal. It can be grown successfully over a wider area than any other and furnishes nutritious food for man as well as the staple grain feed for cattle and draft animals. The production of corn should be increased this year to the fullest extent, taking into consideration seed, labor, and existing economic conditions, and the availability of good land in corn-growing regions not needed more urgently for other crops. The acreage may well be increased in most of the country east of the one-hundredth meridian, as corn, in general, thrives in this region.

An appreciable increase in the corn crop is most feasible, however, in the sections of highest corn production. Favorable growing conditions exist in such regions; farmers there are familiar with corn growing; they have the necessary equipment available, and have adapted corn production to prevailing economic conditions. Farmers in such regions, through many years of experience, have learned methods of successfully combating adverse conditions. They know that the planting of virile, tested seed in well-tilled, friable soil, immediate replanting of missing hills, and early and continued cultivation of the fields count for much in the ability of the plants to produce a bountiful yield. This knowledge should be put to good use during the coming season in order that however unfavorable conditions may be production of an exceptionally large crop may be assured.

In practically every county in the country in which experience has shown that corn may be produced successfully, the possibilities of increasing the corn crop without encroaching upon other important crops is at least worthy of consideration, if land, labor, and seed are available.

Areas of Maximum Corn Production.

A list of the leading corn-producing counties in the principal corn-producing States marks roughly the area in which efforts to increase the production of corn should be most successful. Such a list of counties for the 10 leading corn-producing States follows. The States and the counties within them are named in the order of their importance in corn production. Although early plantings have been completed or are in progress in some of the counties, late additional plantings may be advisable in such regions.

Illinois.—Champaign, Iroquois, La Salle, Livingston, McLean, Bureau, Christian, Edgar, Henry, Lee, Logan, Macon, Sangamon, Shelby, Vermilion, Will, Adams, Coles, Dekalb, Dewitt, Douglas, Fayette, Ford, Fulton, Grundy, Hancock, Kankakee, Knox, McDonough, Macoupin, Mason, Mercer, Montgomery, Morgan, Ogle, Peoria, Piatt, Pike, Tazewell, Warren, Whiteside, Woodford, Madison, Marshall, Moultrie, Wayne, White, Greene, Jasper, Jefferson, Kane, McHenry, Marion, Stephenson, Carroll, Clark, Clay, Cook, Hamilton, Henderson, Kendall, Menard, Winnebago, Cass, Clinton, Crawford, Effingham, Franklin, Rock Island, St. Clair, Schuyler, Stark, Washington.

Iowa.—Harrison, Plymouth, Pottawattamie, Sioux, Woodbury, Adair, Benton, Blackhawk, Boone, Buena Vista, Butler, Calhoun, Carroll, Cass, Cedar, Cherokee, Clinton, Crawford, Dallas, Franklin, Fremont, Greene, Grundy, Guthrie, Hamilton, Hardin, Jasper, Johnson, Keokuk, Kossuth, Linn, Lyon, Mahaska, Marshall, Mills, Monona, O'Brien, Page, Pocahontas, Polk, Poweshiek, Sac, Shelby, Story, Tama, Washington, Webster, Wright, Audubon, Buchanan, Cerro Gordo, Delaware, Fayette, Ida, Iowa, Madison, Marion, Montgomery, Clay, Clayton, Floyd, Hancock, Henry, Jones, Scott, Taylor, Warren, Wayne.

Nebraska.—Custer, Buffalo, Gage, Knox, Lancaster, Saunders, Antelope, Blaine, Boone, Butler, Cass, Cedar, Clay, Cuming, Dawson, Dixon, Fillmore, Frontier, Furnas, Hamilton, Holt, Jefferson, Johnson, Lincoln, Madison, Nuckolls, Otoe, Pierce, Platte, Richardson, Saline, Seward, Thayer, Wayne, Webster, York, Adams, Burt, Dodge, Franklin, Phelps, Polk, Redwillow, Thurston, Valley, Greeley, Hall, Harlan, Howard, Kearney, Nance, Nemaha, Pawnee, Sherman, Stanton.

Missouri.—Bates, Nodaway, Vernon, Atchison, Audrain, Barton, Callaway, Carroll, Cass, Harrison, Henry, Johnson, Lafayette, Macon, Monroe, Pettis, Saline, Boone, Chariton, Dekalb, Holt, Ray, St. Clair, Andrew, Caldwell, Clinton, Cooper, Daviess, Gentry, Greene, Jackson, Jasper, Knox, Linn, Pike, Stoddard, Benton, Cedar, Dade, Lincoln, Livingston, Mississippi, Montgomery, New Madrid, Polk, Shelby, Sullivan, Adair, Buchanan, Clark, Clay, Franklin, Grundy, Lawrence, Lewis, Mercer, Newton, Ralls, Randolph, Scotland, Scott.

Indiana.—Benton, Knox, Montgomery, Tippecanoe, Boone, Clinton, Madison, Shelby, White, Hamilton, Hendricks, Randolph, Rush, Warren, Allen, Carroll, Delaware, Fountain, Gibson, Grant, Henry, Jasper, Laporte, Newton, Posey, Sullivan, Wayne, Bartholomew, Cass, Daviess, Greene, Hancock, Howard, Jay, Johnson, Kosciusko, Marion, Miami, Morgan, Parke, Putnam, Tipton, Vigo, Wells, Adams, Decatur, Elkhart, Fulton, Huntington, Jackson, Lake, Marshall, Porter, Pulaski, St. Joseph, Spencer, Wabash, Warrick.

Texas.—Collin, Fannin, Grayson, Lamar, Denton, Hunt, Navarro, Bell, Cooke, Hill, McLennan, Milam, Red River, Dallas, Falls, Hopkins, Limestone, Montague, Smith, Wise, Cass, Cherokee, Clay, Coryell, Ellis, Fayette, Gonzales, Kaufman, Rusk, Van Zandt, Wilbarger, Williamson, Anderson, Bowie, Guadalupe, Harrison, Henderson, Houston, Lavaca, Nacogdoches, Parker, Robertson, Washington, Wichita, Bastrop, Dewitt, Fort Bend, Freestone, Grimes, Panola, Shelby, Tarrant, Travis, Uphsur, Wharton, Wheeler, Wood.

Kansas.—Butler, Jewell, Marshall, Nemaha, Reno, Republic, Sedgwick, Smith, Sumner, Washington, Barber, Brown, Clay, Cloud, Coffey, Cowley, Crawford, Decatur, Dickinson, Graham, Greenwood, Harper, Jackson, Jefferson, Kingman, Labette, Lyon, McPherson, Marion, Mitchell, Morris, Osage, Osborne, Phillips, Pottawatomie, Rice, Stafford, Bourbon, Cherokee, Franklin, Linn, Miami, Montgomery, Neosho, Shawnee, Wabaunsee, Allen, Anderson, Harvey, Norton, Pratt, Riley, Rooks, Saline, Wilson, Atchison, Doniphan, Douglas, Elk, Johnson, Ottawa, Sheridan, Barton, Chautauqua, Kiowa, Leavenworth, Lincoln.

Ohio.—Darke, Wood, Madison, Pickaway, Clinton, Fayette, Franklin, Greene, Purnam, Ross, Butler, Champaign, Clark, Hancock, Henry, Highland, Mercer, Miami, Paulding, Preble, Van Wert, Auglaize, Fairfield, Hardin, Licking, Logan, Marion, Montgomery, Seneca, Shelby, Union, Warren, Adams, Allen, Brown, Clermont, Delaware, Fulton, Sandusky, Wyandot, Crawford, Defiance, Huron, Knox, Richland, Stark, Wayne, Williams.

Oklahoma.—Caddo, Canadian, Comanche, Garfield, Grady, Grant, Kay, Alfalfa, Blaine, Bryan, Craig, Custer, Garvin, Kingfisher, Lincoln, Osage, Stephens, Tillman, Washita, Dewey, Logan, McClain, Major, Noble, Payne, Pottawatomie, Tulsa, Woodward, McIntosh, Muskogee, Oklahoma, Pawnee, Roger Mills, Woods, Cleveland, Ellis, Jefferson, Kiowa, Ottawa, Rogers, Wagoner.

Kentucky.—Graves, Henderson, Union, Christian, Daviess, Grayson, Hardin, Ohio, Pulaski, Warren, Barren, Breckenridge, Calloway, Crittenden, Hopkins, Logan, Madison, Adair, Ballard, Butler, Hart, Hickman, Lawrence, Livingston, Marshall, Muhlenberg, Nelson, Pike, Todd, Trigg, Wayne, Webster, Whitley.

Canned pineapples to the value of $5,986,190 were shipped from Hawaii to the United States in 1915.

SPRAY TO SAVE THE FRUIT CROP FROM INSECTS AND DISEASES.

Maximum Production of Paramount Importance—Specialists Advise Methods for Control of Moths, Caterpillars, Aphids, Scale, Curculio, Scab, Blotch, and Rots—Treatment for Apple, Peach, Plum, and Cherry—Spraying Schedules.

By A. L. Quaintance, *Bureau of Entomology*, and John W. Roberts, *Bureau of Plant Industry*.

Fruit, either in fresh, dried, canned, preserved, or jellied form, is a food product of recognized value. The maximum production of good fruit at this time is, therefore, of paramount importance. Directly concerned in the production of such fruit are spraying operations for the control of various insects and diseases.

Owners of commercial orchards have long recognized the importance of spraying, but there are many small orchards and so-called home orchards, the owners of which have not adopted spraying operations, or do not give sufficient attention to the work. The uncared-for condition of such orchards is too often revealed by the great number of windfall fruits and the inferiority of that which remains on the trees.

No single feature of orchard practice yields so high a percentage of benefit as spraying, often increasing the value of the product several hundred per cent. Every fruit grower, large or small, has it within his power to save his fruit from loss by insect and fungus pests, and thus add materially to the food supply of the nation. Spraying is now recognized by progressive growers as an exceedingly cheap form of insurance, not only protecting the fruit during the growing season, but insuring its proper keeping in storage.

SPRAYING THE APPLE.

The apple is grown over a very large territory and is our most important and valuable fruit crop, and when properly sprayed and handled will keep in storage for months.

Insect Pests.

The codling moth.—The codling moth is the dirty white or pinkish caterpillar which feeds within the fruit, mostly around the core, resulting in a large number of windfalls during the summer and in wormy fruit at harvest time. In the absence of treatments this insect will destroy each year a large proportion of the crop. Fortunately it yields readily to treatments, and a high percentage of benefit follows through spraying operations against it as outlined in the apple spraying schedule below.

The plum curculio.—This little snout beetle attacks various fruits, as the apple, peach, plum, cherry, etc. Early in the spring the beetles puncture the little apples for feeding and egg laying purposes, causing much of the fruit to fall, and the fruit which remains on the trees becomes knotty and misshapen as it grows. The curculio is notably worse in neglected orchards, or in orchards which are in sod and more or less grown up in weeds and trash. In order to effect a satisfactory control of the curculio by sprays, these unthrifty conditions must be corrected.

The apple maggot.—This insect, often known as the "railroad worm," railroads or mines the pulp of the apple, making brownish patches or trails. Several maggots in the fruit will reduce the pulp to a filthy mass merely held together by the skin. Its injuries are confined largely to the Northeastern States. Present evidence indicates that the apple maggot may be controlled by the application of arsenical sprays to the fruit and foliage during early July, and some observers hold that routine orchard spraying is effective in obviating important injury. Dropped wormy fruit should be promptly collected and destroyed.

Apple aphids.—Principally three species of aphids attack the fruit and foliage of the apple, namely, the rosy aphis, the green apple aphis, and the oat aphis. The rosy aphis is especially injurious to the blossom clusters and causes the fruit to become knotty and distorted or to fail to properly thin out in the clusters, resulting in undersized fruit. The oat aphis is of relatively little importance, though the green apple aphis may seriously check the growth of young trees during the summer when abundant on the shoots and foliage. These aphids winter on the apple trees in the egg condition, the young hatching as the buds are breaking in the spring. They are best controlled by the use of 40 per cent nicotine sulphate used at the rate of three-fourths pint to 100 gallons of spray. If the treatment for the San José scale be delayed the nicotine may be added to the strong lime-sulphur wash, effecting combination treatment for these two pests. The nicotine may also be added to advantage to the first scab treatment of the spray schedule.

Leaf-eating caterpillars.—Various leaf-eating caterpillars, as canker worms, tent caterpillars, and the like, are more or less abundant in orchards each year in different parts of the country. These caterpillars, as a rule, are kept well in check by the use of arsenical sprays.

Scale insects.—The San José, oyster-shell, and scurfy scales are very generally present in apple orchards throughout the country. The San José scale is by all odds the most injurious, and in the absence of annual treatments will destroy or greatly injure the trees. An individual scale is about the size of a pin head and has a nipplelike prominence in the center. When abundant the scales literally incrust the limbs and branches, to which they give an ash-gray appearance. Badly infested bark when cut into usually shows a reddish color. These scale pests are very successfully controlled by the use of strong sprays applied during the dormant period of the trees, as indicated in the schedule of applications.

Diseases of the Apple.

Apple scab.—This is the most destructive disease of the apple and is almost universally distributed. It appears very early in the season and causes not only grayish or brownish unsightly spots on the fruit, but often causes cracking and dwarfing of the fruit. It also appears as black blotches on the leaves. It is a cool climate disease and hence is most destructive in the more northern apple-growing regions. It is well controlled by spraying according to the methods outlined hereafter.

Bitter-rot.—Bitter-rot is typically a southern apple disease, and in the regions in which it occurs it is one of the most dreaded. It does not appear until the weather has become hot, this date being usually about the 1st of July, and is one of the hardest of all diseases to control. The rotted spots, with the pink or dark-colored concentric circles of fruiting postules, are typical of this disease. The removal of the limb cankers and mummied fruits in which it lives over from season to season is an important aid to control by spraying. In the East Yellow Newtown (Albemarle Pippin) is especially susceptible to this disease. In the Middle West nearly all varieties are susceptible to some extent at least.

Apple blotch.—This disease begins in the early part of the growing season, but is not

conspicuous until nearly midsummer. It is distributed over the southern half of the apple belt and is to the South what the apple scab is to the North. It is most destructive in Kansas, Arkansas, Missouri, Kentucky, and southern Illinois. It occurs on fruit, leaves, and twigs, but is most destructive to the fruit. It appears on the fruit as an irregular brown spot with a hard roughened surface and a somewhat uneven margin. It grows very slowly and finally becomes somewhat sunken. In severe cases, especially on certain varieties, the fruit may finally become badly cracked. Ben Davis, Missouri Pippin, and Northwestern Greening are especially susceptible to this disease.

Sooty fungus and flyspeck.—Toward the end of the summer apples may become covered with large sooty blotches or areas of minute black spots. These diseases do not penetrate the apple skin at all, but injure the market value of the fruit by detracting very greatly from its appearance. These diseases are quite common in the moister parts of the United States and in unsprayed orchards often cause considerable financial loss. They are, in ordinary seasons, controlled by the sprayings applied for the control of other apple diseases.

Black-rot or ring-rot and leaf-spot.—These diseases are caused by the same fungus, and are controlled by cutting out the branches and twigs supplemented by the sprayings recommended for the other diseases. The applications recommended for scab control will control the leaf-spot, and those recommended for bitter-rot will greatly lessen the losses from black-rot.

Spray Schedules.

Dormant tree spraying.—During the dormant period of trees sprays may be used much stronger than at other times, and for this reason are especially advisable for the treatment of scale insects, blister mite, etc. Applications may be made after the leaves have fallen in the fall, during warm days in the winter, or in the spring before the new growth begins to appear. Where aphids are troublesome it is often practicable to delay the San José scale treatment until just as the buds are breaking, and by adding nicotine to the strong lime-sulphur spray effect a combination treatment for these two insects.

SUMMER SPRAYING.

First application.—Use lime-sulphur solution at the rate of 1½ gallons to 50 gallons of water plus 2 pounds of arsenate of lead paste (or 1 pound of powdered arsenate of lead) just before the blossoms open. This is for apple scab, the plum curculio, canker-worms, the bud moth, case-bearers, and the tent caterpillar. Add one-half pint 40 per cent nicotine sulphate if apple red bugs are troublesome and if apple aphids are much in evidence.

Second application.—Use same spray as in first application as soon as the blossoms have fallen. This is for the above-mentioned troubles as well as for the codling moth and leaf-spot. It is the most important application for both apple scab and the codling moth. In spraying for the codling moth at this time, the aim is to drive in the calyx end of each little apple a quantity of the poison, and, to accomplish this, painstaking work is necessary. Failure to do thorough spraying at this time for the codling moth cannot be remedied by subsequent applications.

Third application.—Use the same spray indicated above 3 to 4 weeks after the blossoms fall. This is the second treatment for codling moth and leaf-spot, and gives further protection against apple scab and certain insects. In orchards in which blotch has been prevalent this application should be made not less than 3 weeks after the blossoms have fallen. Where this disease has been severe, Bordeaux mixture (3–4–50) should be substituted for the lime-sulphur solution.

Fourth application.—Use Bordeaux mixture (3–4–50) and an arsenical 8 to 9 weeks after the petals fall. This is the first application for the second brood of the codling moth and for bitter-rot. In orchards in which bitter-rot has been a serious disease this application should be advanced about one week.

Fifth application.—Use Bordeaux mixture from 2 to 3 weeks after the fourth application. This is the second application for bitter-rot, and since it is very little extra expense to add an arsenical, this may be profitably done as a further protection against late-appearing larvæ of the codling moth.

Sixth application.—Use Bordeaux mixture again 2 or 3 weeks after fifth treatment has been applied. This is the third application for bitter-rot and is ordinarily sufficient to carry the fruit through, but on specially susceptible varieties in bitter-rot sections, a treatment to be made 2 weeks later may be found necessary.

Seventh application.—In severe cases of bitter-rot a seventh application may be necessary, and in severe cases of blotch an extra treatment midway between the third and fourth applications is sometimes necessary.

NOTE.—In the more northern apple-growing sections the first four applications will, during ordinary seasons, be sufficient to protect the fruit from various insects and diseases mentioned. In the more central States, where bitter-rot and blotch are prevalent, the fifth and sixth applications will be necessary. In the case of summer apples, only the first three applications are necessary.

PEACH SPRAYING.

There are four or five serious insect and fungous pests of the peach effectively controlled by spraying. Notwithstanding the fact that the larger commercial growers throughout the country have adopted measures for the control of these troubles, there is still room for such improvement on the part of many orchardists, especially those having small home orchards. Although successful spraying of the apple has been practiced for many years, it is only recently that sprays have been developed which are effective and safe for the tender foliage and fruit of the peach and certain other stone fruits. The development of the combination spray of arsenate of lead and the self-boiled lime-sulphur mixture has been of enormous value to peach growers, and its use has placed the cultivation of this crop on a much sounder basis than heretofore.

Insect Pests.

The plum curculio.—This insect, already referred to under the head of apple, is the cause of a large amount of injury to the peach. Aside from the injury which it actually does to the fruit, its attack much favors the spread and infection of the fruit by brown-rot fungus. Its control is therefore especially essential in connection with remedial operations against brown-rot.

The San José scale.—This insect, also mentioned under apple insects, requires treatment on the peach. Applications should be made while the trees are dormant, and if spraying be delayed to just before the buds are due to swell the treatment also controls peach leaf curl. Winter strength commercial lime-sulphur solution is almost universally used in the case of the peach, since the fruit buds and twigs are more likely to be injured by oil sprays than is true of the pome fruits.

Diseases.

Leaf curl.—This disease affects the leaves of the peach, causing them to become reddened and curled. It begins quite early in the season and is easily controlled by the same treatment which controls scale insects.

Peach scab.—This disease is the ordinary black spot of freckles of the peach. It appears early in the summer, and when several spots run together and infections are numerous it gives the fruit a smutty appearance. Severely infected fruits are dwarfed or misshapen, and are often cracked so severely as to cause dropping. This disease causes more loss to growers than is ordinarily realized because infected fruits so often fail to attain their normal size.

Brown rot.—This is the ordinary rot of the peach which is so often very destructive at ripening time, and is the only peach rot of commercial importance. It is particularly destructive during warm, moist weather. Especially in the South it may sometimes cause the loss of practically the entire crop.

Schedule of Applications.

In the eastern half of the United States most of the peach orchards should be given the combined treatment of arsenate of lead and self-boiled lime-sulphur mixture for

curculio, scab, and brown rot. The curculio and brown rot are more especially troublesome in the South, whereas peach scab is worst in the Allegheny Mountain region and in the Northern States.

Midseason varieties.—The midseason varieties of peaches, such as Reeves, Belle, Early Crawford, and Elberta, should be sprayed as follows:

(1) With 2 pounds of arsenate of lead paste (or 1 pound of arsenate of lead powdered) per 50 gallons of water, to which has been added the milk of lime made from slaking 3 or 4 pounds of stone lime, about 10 days after the petals fall, or at the time the calyxes are shedding.

(2) With self-boiled lime-sulphur and arsenate of lead, two weeks later, or four to five weeks after the pedals have been shed.

(3) With self-boiled lime-sulphur mixture four or five weeks before the fruit is due to ripen.

Late varieties.—The Salway, Heath, Bilyeu, and other varieties with a similar ripening period should receive the same treatment prescribed above, with an additional application of self-boiled lime-sulphur mixture alone to be applied three or four weeks after the second application.

Early varieties.—The Greensboro, Carman, Hiley, Mountain Rose, etc., and varieties of the same ripening period should receive the first and second applications only as prescribed for midseason varieties.

PLUM AND CHERRY SPRAYING.

Japanese plums should receive the same treatment as peaches having the same ripening season. Soap should be added in the third application to enable the spray to stick to the smooth plum fruits.

Cherries should receive the same treatment as early varieties of peaches, except that commercial lime-sulphur solution diluted at the rate of 1 gallon to 40 gallons of water should be used in place of the self-boiled lime-sulphur. Where leaf-spot has been severe this solution should also be used in the fruit treatment. For the control of leaf-spot, an application of the diluted lime-sulphur should also be made as soon as the fruit is picked.

Plums other than the Japanese varieties should receive the treatment outlined in the peach schedule, except that commercial lime-sulphur solution diluted at the rate of 1 gallon to 40 gallons of water is to be preferred to the self-boiled lime-sulphur.

SPRAY MATERIALS.

Arsenate of lead.—This arsenical comes on the market in paste and powdered form. In orchard spraying the paste is used at the rate of 2 pounds and the powdered lead at the rate of 1 pound to 50 gallons of water or fungicide, as dilute lime-sulphur solution. When used in water without a fungicide, the milk of lime made from slacking 2 or 3 pounds of stone lime should always be added for each 50 gallons of spray to obviate danger of burning fruit and foliage. This poison may be obtained of various manufacturers or usually of local seedsmen, implement dealers, or druggists. Care should always be taken in the handling and storage of arsenicals to obviate the danger of poisoning persons or live stock. Where smaller quantities of the arsenical are desired, the proportions indicated should be followed.

Lime-sulphur solution.—Strong lime-sulphur solution is used as a dormant tree treatment for the control of scale insects and certain diseases, and in a much more dilute condition as a spray on trees in foliage for the control of various fungous diseases. Many growers prefer to purchase the commercial article, which comes on the market of a specific gravity of about 33° Baumé. This is used at the rate of 1 gallon to 7 or 8 gallons of water for winter spraying, and at the rate of 1½ gallons of water for use on apple and other pome fruits as a summer fungicide. In summer spraying the arsenate of lead and 40 per cent nicotine sulphate are added to the dilute lime-sulphur solution, thus permitting the treatment of sucking and biting insects and fungous diseases. Concentrated lime-sulphur solution can be made at home, which practice is followed by numerous growers. Those interested in this matter should write to the department for more explicit information than is feasible to give here.

Nicotine.—Nicotine is used for the control of certain sucking insects as plant lice, the apple red bugs, the pear psylla, etc. This product comes on the market of various grades, but the grade known as 40 per cent nicotine sulphate is mostly employed. This may be used alone in water to which has been added a little soap, or in lime-sulphur and arsenate of lead, or in Bordeaux mixture and arsenate of lead sprays. It is employed at the rate of from three-fourths to 1 pint per hundred gallons of spray.

Bordeaux mixture.—Bordeaux mixture is composed of 4 pounds of bluestone (copper sulphate) and 4 pounds of stone lime to 50 gallons of water. For early summer spraying the amount of bluestone may be reduced to 3 pounds to lessen risk of injury. To make Bordeaux mixture for use in an ordinary barrel sprayer, dissolve 3 to 4 pounds of bluestone in 25 gallons of water and in a separate container slake 4 pounds of stone lime and dilute to 25 gallons, then pour the solutions simultaneously through a strainer into the spray tank. Stock solutions, especially where large quantities are to be used, are desirable, since they save time. A stock solution of bluestone is made by dissolving it at the rate of 1 pound to 1 gallon of water. The bluestone should be suspended in a sack in the upper part of the barrel or other container, so that it is just beneath the surface of the water. It will be dissolved if left for a few hours in cold water and more rapidly in hot water. A stock solution of lime may be made by slaking the lime in a little water and then diluting so that each gallon of water contains 1 pound of lime. Just before the stock solutions are used they should be stirred thoroughly. To make up Bordeaux mixture from stock solutions it is only necessary for 3 or 4 gallons of the stock solution of bluestone to be poured into a suitable container and 4 gallons of the stock solution of lime into a separate container, diluting each to 25 gallons and then pouring them simultaneously into the spray tank. Commercial Bordeaux may be used in place of the home-made product.

Self-boiled lime-sulphur mixture.—The self-boiled lime-sulphur mixture consists of 8 pounds of sulphur and 8 pounds of good stone lime to each 50 gallons of water, and is made as follows: The lime is placed in a barrel and enough water added to nearly cover it. As soon as the lime begins to slake, the sulphur should be added. Water should be added from time to time to form a thoroughly thick paste, which should be constantly stirred. As soon as the lime is entirely slaked, enough water should be added to cool the mixture, which is then ready to be strained into the spray tank, where it should be diluted to the proportions given above. The sulphur used may be in the form of "flowers," "flour" or "commercial ground," and should, if necessary, be run through a screen to break up lumps. Commercial substitutes for the self-boiled lime-sulphur may be used, but should not be confused with commercial lime-sulphur solution.

SPRAYING APPARATUS.

For the proper application of sprays some form of spray pump with suitable nozzles is absolutely essential. Most spray outfits are supplied with spray rods permitting the operator to direct the spray as desired. The hose should be of sufficient length to permit convenient spraying.

Spray outfits vary in size from small bucket pumps to gasoline power outfits for large scale operations. Bucket pumps answer well for small home orchards where but a few trees are to be sprayed. Where the orchard interest is larger, and especially where older trees are to be treated, a barrel pump is essential. A barrel pump may be purchased for from $20 to $30, depending on the equipment. In spraying, the outfit can be mounted upon a sled or placed in a cart or wagon. An outfit for operations on a still larger scale consists of a 100 or 200 gallon tank mounted upon a truck, having a strong double-acting hand pump mounted upon it. For large commercial operations, gasoline power outfits are largely used.

Information concerning dealers in spraying material and apparatus can be obtained from reliable horticultural journals.

Further information on orchard spraying may be obtained by writing to the United States Department of Agriculture or to your State experiment station.

USE UP STALE BREAD.

Do Not Permit the Odds and Ends Frequently Found in the Bread Box to Be Wasted.

Bread is one of the items most commonly wasted in many American households, say the specialists of the United States Department of Agriculture. This waste is probably due to the fact that many housekeepers do not think of bread as costing much and are careless about its use or do not know what to do with the odds and ends frequently found in the bread box.

Good, fresh bread has a spongy texture, which in time disappears, leaving the bread dry and crumbly, the moisture gradually passing out through the crust. Bread a little too stale to be appetizing, but not yet hard, may be freshened by putting it into the oven for a few minutes. The heat seems to drive the moisture from the crust back into the center of the loaf, making the crust more crisp and the crumb a little more spongy. Some housekeepers moisten the surface of the bread and sometimes cover it before putting it into the oven, but others think that moistening injures the texture of the crust without improving the crumb.

Rolls or biscuits which have a greater surface in proportion to their size dry out more rapidly than loaves of bread. It is good planning, therefore, not to provide more than will be used at a meal or at least a day after baking. For similar reasons, bread stays fresh longer in the loaf than after it is sliced. No more than will be needed should be cut for any one meal, and one loaf should be used up before the next is cut into. When the bread needs freshening it is a good plan to cut the required slices and put them into the oven for a few minutes just before serving.

Toast.

Toast is another form in which partly stale bread can be made attractive. In many families it is served only for breakfast, luncheon, or supper, but the custom which many high-grade restaurants have adopted of serving thin, crisp, hot toast with the more substantial meals might well be followed at home. Such dishes as chopped meat with gravy, creamed chicken or fish, poached eggs, melted cheese, cooked asparagus, Swiss chard, baked tomatoes, etc., are served very commonly on toast. Cream or milk toast (that is, toast with a cream sauce or milk gravy, perhaps flavored with a very little chipped beef, salt fish, or other savory) may be used as the main dish at breakfast, luncheon, or supper. Slices of toast may also be dipped in water or milk and beaten egg and lightly browned on a hot greased pan. The recipe for this dish, which is called by various names, is given in the appended recipes under the heading "Egg toast." It may be used at breakfast, and has the advantage of making the eggs "go further" than if used in a separate dish, or it may be served with cinnamon and sugar, sirup, or any sweet sauce for dessert.

As a Breakfast Food.

Another good way of using stale bread, or of treating bread so that it shall not become stale, is to put the pieces in the warming oven or on the back of the stove and leave them until they are crisp and a delicate brown throughut. This is often called twice-baked bread and is very popular with children and also with grown-ups, who like its "crunchiness" and the flavor which comes with the slight browning. The rusks which used to be commonly served like breakfast cereals in some parts of the country were made by crushing such twice-baked bread with a rolling pin.

Crumbs Valuable in Cookery.

There is nothing new in the idea of using bread crumbs in cookery, and most housekeepers are in the habit of having some on hand for use in scalloped dishes, stuffing for meat, puddings, etc. Few realize, however, how much more generally they might be utilized. Many commercial bakers use bread crumbs to some extent as a substitute for the flour in many sorts of cakes, cookies, puddings, etc. Crumbs may also be used instead of flour and starch for thickening soups and sauces.

Any bits of bread which can not be eaten on the table should be saved and crumbed for use in cooking. Some housekeepers keep two kinds on hand—one, stale crumbs made chiefly from the inside of the loaf and suitable for use in the place of flour; and dried crumbs made from any part of the bread browned a little in a very slow oven and crushed fine to be used in scalloped dishes, for the coating of croquettes or other fried foods or wherever a crusty fine crumb is needed. To prevent their growing musty, crumbs should be kept in dry air-tight containers. Fruit jars are often convenient for the purpose.

How to Utilize Quick Breads.

Yeast-made bread is by no means the only bread that can be utilized in some of the ways suggested. The quick breads raised by baking powder, soda, and sour milk or other acid, etc., dry out more quickly than the yeast bread, probably because the water is not so thoroughly incorporated with the flour during the making. These breads can not be freshened simply by putting in the oven like yeast-raised bread. Quick biscuit, however, make delicious toast, which is very convenient for serving under meats, eggs, etc. The crumbs made from them may also be used in other breads, cakes, and puddings, as may also corn bread and cake crumbs wherever their flavor is not objectionable. Boston brown bread toasted and served with a cream sauce is a delicious dish for supper or breakfast. Toasted rye bread is also good. Crackers, which are practically dried bread baked in different shapes, and which may lose their crispness if kept exposed when the air is moist, can be freshened or made crisp by putting into the oven. The crumbs made from them serve many of the purposes of dried bread crumbs. A number of recipes for using left-over bread follow:

Stale-Bread Recipes.

VEGETABLE SOUP THICKENED WITH BREAD CRUMBS.

1 quart skim milk.
1 cup bread crumbs, or 2 large slices stale bread.
Salt.
Small amount spinach or outer leaves lettuce (not more than 4 ounces).
1 small slice onion.

Cut the vegetables into small pieces and cook with the bread crumbs in the milk in a double boiler. If a large quantity is being prepared, as in a school lunch room, for example, put the vegetables through a meat chopper. In this case slices of bread may be ground with the vegetables in order to absorb the juice.

PANCAKES.

1 cup crumbs.
2¾ cups skim milk.
½ cup flour.
4 teaspoons baking powder.
1 teaspoon salt.
1 teaspoon sugar.
1 teaspoon melted fat.
1 egg.

Soak crumbs in milk for three-fourths of an hour. Then add other ingredients and cook on a hot griddle, like ordinary pancakes. If sour milk is used, substitute one-half teaspoon baking soda for the 4 teaspoons baking powder.

GINGERBREAD.

1 cup molasses.
½ cup boiling water.
1½ cups fine bread crumbs.
⅔ cup flour.
1 teaspoon baking soda.
1½ teaspoons ginger.
½ teaspoon salt.
4 teaspoons melted lard or other fat.

Add water to molasses and combine with the dry ingredients mixed together, then add fat, and beat. Bake for about 25 minutes in a hot oven.

INDIAN PUDDING MADE WITH CRUMBS.

1 cup fine crumbs.
1 quart skim milk.
⅓ cup sugar.
¼ cup molasses.
2 tablespoons melted butter, or other fat.
⅛ teaspoon ginger.
¼ teaspoon cloves.
¼ teaspoon cinnamon.

Scald the crumbs in milk; add the other ingredients; and bake 1½ hours in a slow oven. This pudding may be made with any kind of bread crumbs, but it furnishes an especially good means of using up stale corn bread.

EGG TOAST.

6 slices bread.
1 egg.
1 cup milk, skim milk, or water.
½ teaspoon salt.

Beat the egg, and add the liquid and salt. Let the bread soak in the mixture until slightly soft. Then fry to a light brown on a hot, well-greased pan or griddle. More eggs may be used if available.

FOOD COMBINATIONS.

How to Make Use of "Left Overs" and Save Food Material, Fuel, and Labor at the Same Time.

Numerous palatable combinations of two or more food materials which can be prepared by the housewife with but little trouble in themselves will supply the major part of a well-chosen meal. Such combinations should be used very frequently to simplify and make more economical the serving of a rational diet for the family, say specialists of the United States Department of Agriculture. Combining "left overs" into a palatable dish, for example, effects a considerable saving in material, in fuel, and in the labor of preparing meals and cleaning cooking utensils and dishes. Good use thus is made of food which might otherwise be wasted when one dish is prepared, cooked, and handled instead of several.

The character of any one of the daily meals should be determined by that of the other meals that are served. A light breakfast and a light supper or luncheon, for instance, usually make desirable a heavier dinner. In some families the preference may be for a hearty breakfast and dinner and a very light supper, and so on through a considerable range of individual tastes. If the meal is to be a light one, the combination dish, together with the bread and butter which usually accompany American meals, may be all that is wished. If the combination dish forms the central part of a heartier meal, it is in accordance with our usual food customs to serve with it, in addition to bread and butter, such foods as garden vegetables, fruits (fresh or cooked), and simple desserts. Good planning necessitates in the principal meals of the day such variety as has been suggested in order that all the varied nutritive substances which the body requires may be supplied.

The following are some suggestions for a few of the many nutritious combination dishes which may be prepared without too much trouble from staple food materials and common "left overs," and for other foods which can accompany them to make a well-rounded meal. Every housekeeper, of course, will have a special liking for certain dishes and combinations.

Some Typical Combination Dishes.

Spaghetti or macaroni or rice cooked with tomato, onion, or green pepper, and cheese, or cheese sauce, *served with*—
- White, graham, or whole-wheat bread, and butter, and
- Stewed or sliced fruit and simple cookies.

Boiled rice baked (scalloped), with minced left-over meat, chipped beef, or fresh or canned fish, *served with*—
- Beet, dandelion, or other greens, dressed with peanut, olive, cottonseed, or other table oil, with vinegar and lemon juice enough to flavor the dressing, and
- Wheat, corn, or rye bread and honey.

Boiled rice scrambled with eggs, *served with*—
- A succulent vegetable such as stewed tomatoes, canned corn, green peas or beans, and
- Bread and butter, and
- Nuts and raisins or other dried fruits.

Green peas and canned salmon with white (i. e., thickened milk) sauce, *served with*—
- Corn bread and sirup.

Meat pie (meat from inexpensive cuts) or fish pie with flour or potato crust, *served with*—
- Turnips, carrots, onions, or parsnips, and
- Biscuits and butter, with jam or jelly or hot chocolate.

Mashed potato with creamed codfish (i. e., cream sauce containing a little salt codfish), *served with*—
- Lettuce with oil and vinegar or lemon-juice dressing, and
- Crackers and cheese or peanut butter sandwiches.

Meat stew (inexpensive cuts or left-overs), with turnips or other vegetables, including left-overs, and with rice in the stew or flour or corn-meal dumplings; or fish chowder made from fresh, canned, or dried fish, crackers, skim milk, and onion, *served with*—
- Bread and butter, and
- Fresh or stewed fruit.

Boiled dinner (corned beef or corned mutton cooked with fresh vegetables, as potatoes, turnips, carrots, etc.) *served with*—
- Bread and butter, and
- Apple or other fruit and bread-crumb pudding.

Cowpeas boiled with pork and combined with boiled rice, *served with*—
- A green vegetable or vegetable salad, and
- Honey, brown sugar, maple sugar, or date sandwiches.

Beans baked with pork or bacon, *served with*—
- Boston brown bread and butter, and
- Tart apple sauce and cookies.

Bean and cheese roast [1] (a mixture of cooked beans and cheese prepared and seasoned like a meat loaf) with tomato sauce or brown gravy, *served with*—
- Sweet potatoes, and
- Bread and butter, and
- Sliced orange and banana or other fruit.

[1] U. S. Dept. Agr., Farmers' Bul. 487 (1915), p. 28. Cheese and Its Economical Uses in the Diet.

LICE ON SITTING HENS.

Methods for Freeing Birds and Nests of Vermin.

Great care should be taken to keep nests occupied by sitting hens free from mites. It is hard to work effectively against the mites when many hens are brooding. Oil in the form of crude petroleum sprays—the treatment recommended by specialists in the United States Department of Agriculture—used freely about the house at that time, may soil the eggs and prevent successful hatching. Infested quarters, therefore, should be treated thoroughly before hens are set, so as to start them in nests which are absolutely clean. Beneath the straw of the nest a layer of lime and sulphur will tend to prevent mite breeding, and the entire nest may be dusted occasionally with pyrethrum. Broken eggs and the straw soiled by them should be removed promptly, as they tend to attract mites.

Medicated nest eggs, said to control poultry lice, are on the market. These consist largely of naphthalene. While this material will destroy lice when applied generally to the fowl, it is injurious to the hen's eggs as well as to the bird. If used in quantity, or if the medicated eggs are allowed to remain for some time beneath a hen, she may die as a result. Sodium fluorid powder, dusted on the fowl, or dissolved in water and used as a dip, is the best remedy for lice. Farmers' Bulletin 801, "Mites and Lice on Poultry," by F. C. Bishopp and H. P. Wood, gives detailed directions for administering this treatment.

USE STREET SWEEPINGS WITH CARE.

Those who use street sweepings to fertilize gardens should avoid manure that contains oil or tar. Either of these substances is harmful to plants, specialists in the United States Department of Agriculture warn. Sweepings from tarred pavements or oiled roads are likely to contain them. Oil droppings from motor cars often mix with such waste also. If sweepings are collected with some care and before rain or water from street sprinklers have reached them and washed out the elements of fertilizing value, they can be used advantageously.

In connection with the spread of the city gardening movement, now popular throughout the country, the Department of Agriculture believes a warning in regard to oil and tar damage should be given. A specialist in the Bureau of Chemistry cites an instance of damage done to a garden near Silver Spring, Montgomery County, Md., on which unsorted street sweepings from the District of Columbia were used. This garden, according to the specialist, was ruined by the tar products in the fertilizer and it was necessary to remove the top soil and resurface the entire plot with new soil. It is suggested by this official that with some attention to detail it might be possible to collect sweepings from streets that are not tarred, and perhaps from other public places.

CHICKEN LICE.

Sodium Fluorid, a Newly Discovered Remedy, Rids Fowls Quickly of All Such Parasites.

One application of sodium fluorid will kill all lice of chickens, entomologists of the Department of Agriculture have discovered. This inexpensive white powder, they find, will rid a flock of all the seven common species of chicken lice in a few days. One pound, costing only 40 or 50 cents at the time of this writing, is enough to treat 100 fowls, if dusted on. If dissolved in water and used as a dip, the same amount will go three times as far. It is easily applied, economical, gives immediate results, and does not injure the fowls or the poultryman.

The complete effectiveness of the sodium fluorid remedy and methods of using it are discussed in Farmers' Bulletin 801 of the United States Department of Agriculture, "Mites and Lice on Poultry," by F. C. Bishopp and H. P. Wood. The bulletin deals also with mites, the night pests of chickens, which requires a different treatment. Lice are the biting insects that work by day and are a serious foe in neglected small flocks of general farms and back yards.

Sodium fluorid—say it plainly to the druggist or you may get sodium chlorid, common salt, which it not only resembles in name but in appearance—may be obtained at most large drug stores. Until its recent use against cockroaches, and still more recently against poultry, this substance had not been employed as an insecticide. The demand for it, therefore, has been quite limited, and it is not ordinarily found in the stock of the small drug store. Druggists, however, can obtain it readily from manufacturing chemists, and with demand, it likely will be carried by local dealers. The finely powdered commercial form is cheaper and more easily applied by the dusting method than the fine, crystallized sodium fluorid.

Dusting with Sodium Fluorid.

To apply the material in dust form, place it in an open vessel on a table and with one hand hold the fowl by the legs or wings. With the other hand place small pinches of the chemical among the feathers next to the skin, according to what is known as the "pinch" method, which proceeds as follows: One pinch on the head, one on the neck, two on the back, one on the breast, one below the vent, one on the tail, one on either thigh, and one scattered on the under side of each wing when spread. Each pinch can be distributed by pushing the thumb and fingers among the feathers as the material is released. If the chicken is held over the vessel, the material which falls from the fowl during the operation is recovered.

The material also may be applied by means of a shaker, but this method has some disadvantages as compared with the "pinch" method. When this method is used the amount of sodium fluorid may be reduced by adding four parts of some finely powdered material, such as road dust or flour, to each part of the fluorid. The dust, while not poisonous, is somewhat irritating to the nose and throat. If allowed to remain on the skin in any quantity for any great length of time, it may cause slight local irritation. For these reasons, those dusting a large number of chickens would do well to cover nose and mouth with a dust guard or damp cloth and to wash their hands occasionally.

Dipping with Sodium Fluorid.

The dipping method is more economical, but among many poultry raisers there is a general sentiment against the practice of dipping fowls, largely because most of the dips contain materials which discolor the feathers. The sodium fluorid dip, however, is harmless and as compared with dusting is more easily done. As it is necessary that the fowls dry quickly, dipping is most applicable in the Southern States and to summer treatments in the North. For lice on young chickens, young turkeys, and in fact all newly hatched or sick fowls, the application of sodium fluorid in the dust form is recommended.

This is the way the dip is prepared: In a tub of tepid water dissolve the poison at the rate of ¾ to 1 ounce of the commercial powder, or ⅔ of an ounce of the chemically pure material, to each gallon of water. The fowls should be held by the wings over the back with the left hand and quickly submerged in the solution, keeping the head out, while the feathers are ruffled with the other hand to allow the dip to penetrate to the skin. The head then should be dipped once or twice and the bird lifted and allowed to drain a few seconds. A fowl may be treated in 30 to 45 seconds. The sodium fluorid solution should not be allowed to remain long in galvanized vessels as its action on this metal is injurious. The solution does not injure the hands unless it comes in contact with sores, when it may cause slight irritation.

In experiments conducted by the Department's specialists more than 800 fowls have been dipped at one time, using on the average 5.2 ounces of sodium fluorid to 100 birds, at a cost of 13 cents. Labor is also reduced by dipping, the cost being about 58 cents for 100 fowls.

Spring seedings of sweet clover in general are satisfactory, but in the South excellent stands are obtained from midwinter seedings also. Fall seedings are usually successful south of the latitude of southern Ohio.

ECONOMY IN USING MEAT.

Suggestions for Saving in the Cost of the Most Expensive Article in the Food Bill.

Meat is one of the more expensive items in the food bill of the ordinary family, and for this reason it is important that it be bought and used to the best possible advantage.

American consumers are reminded of this in a statement just issued by specialists of the United States Department of Agriculture. The methods by which economy may be effected will vary, it is pointed out, with the conditions surrounding each family, with the amount of personal supervision given by the housewife to the preparation of food, with her skill, with market conditions, and with the willingness of the members of the family to eat dishes other than those—often especially expensive—for which they have a special liking.

Many persons, says the statement, eat over-abundantly of meat. In such cases it should be possible, if the incentive is great enough, to reduce expenditure for meat by reducing the amount purchased. Where meat has been purchased by telephone or orders to a butcher's boy, personal shopping and careful selection may make a saving possible. Still another possibility for economizing is to purchase cheaper cuts and to compensate for any toughness and less desirable flavor by preparing them more carefully for the table. Finally, economy often may be achieved by utilizing the meat more completely, including the trimmings and bones and "left overs."

In purchasing the cheaper and often tougher cuts of meat instead of the choicer cuts, a housewife is losing little if any nutriment, provided, of course, the proportion of bone to meat is no greater than in the more costly kinds. She rather is sacrificing only texture or flavor or ease of preparation for the sake of cheapness; and, if she wishes to produce dishes as palatable as those made from expensive meats, must expend more care on preparing, flavoring, and cooking. If the cheaper steaks are purchased, for example, a degree of tenderness may be imparted to them by the well-known method of pounding the meat. The juices and flavors of such steaks will be retained more satisfactorily if flour is sprinkled over them during the beating process and so worked into the fibers on the surface.

Another common method of utilizing the tougher meats is to grind them and form them into balls which may be broiled like steak. Cheap cuts of meat also may be cooked slowly with vegetables or dumplings in a casserole or any other thick-walled

baking dish which can be covered, the juices thereby being retained.

Whatever the quality of meat bought, undoubtedly there will be in most cases trimmings and scraps such as fat, bones, gristle, etc. The fat may be tried out by grinding or chopping and heating in a double boiler. The tried-out fat then may be boiled in water and allowed to solidify on the surface of the water when the latter cools, impurities being scraped from the under surface of the cake. Trimmings of lean meat, gristle, and bone may be boiled slowly and used for soup stock.

Left-over portions of cooked meats from serving dishes may be used in a variety of ways to prepare palatable dishes. In utilizing such materials and in the preparation of other meats the knowledge of a few general principles of cookery, such as the quantity of flour required to thicken sauce, the time needed for cooking meats of varying toughness, the proportion of starchy foods or succulent vegetables to combine with meats and the like makes it easy to utilize whatever materials may happen to be on hand without a special recipe for each particular dish. Left-over cooked meats may be used, like small pieces of uncooked meat, with vegetables and other foods in the preparation of casserole dishes, in making stews, hashes, croquettes, etc. Cold sliced meat may be served with hot gravy made from soup stock, milk, meat fat, and flour, or other ingredients.

An important way in which the amount of money expended for meat may be lessened is by preparing relatively small quantities of meat in such a way as to extend its flavor to other and cheaper foods. In using meat so as to extend its flavor it may be ground and combined with rice, bread crumbs, etc., to form croquettes; made into pies with relatively large quantities of pastry; cooked with dumplings; served in the same dish with gravy and starchy foods, such as spaghetti or rice; ground and used with bread crumbs or other materials, as a stuffing for vegetables, such as tomatoes and green peppers; or cut thin and wrapped around a stuffing of bread crumbs, rice, vegetables, etc.

If it is considered desirable, other protein foods may be consumed in larger quantities to take the place of the meat formerly eaten. This protein may be furnished by eggs, if they are cheap, skim milk, cheese, dried beans, peas, cowpeas, and other legumes.

A few typical recipes are given below as examples of the many dishes housewives may prepare with meat as the chief ingredient.

Dishes from Cheaper Cuts of Meat.

Braised beef or pot roast.—Brown the meat on all surfaces, place in closely covered kettle or other receptacle with small quantity of water and flavoring vegetables, such as onion, carrot, etc., and cook until tender. Browning the meat helps to keep in the juices. The slow cooking in water and steam makes for tenderness.

Savory beef.—Cut a pound of top round of beef into 2-inch pieces and sprinkle with flour; fry a small piece of salt pork until light brown; add beef and fry for about 35 minutes, stirring occasionally. Cover with water and simmer about two hours (fireless cooker may be used); season with salt and pepper or paprika. Serve with a sauce made as follows: Cook in water for 20 minutes a cup of tomatoes, part of a stalk of celery, one-half onion, three whole cloves, three peppercorns, and one blade of mace or a very little nutmeg. Rub through a sieve, add some of the gravy from the meat, thicken with flour moistened with cold water, and season with salt and paprika. Noodles, boiled rice, hominy, or chopped potatoes, carrots, and green peppers or other vegetables in season may be served on the same dish.

Casserole roast.—(A casserole may be improvised by using a heavy earthenware dish covered with a plate.) Brown round or rump of beef in fat from a slice of fried pork. Place in casserole with chopped carrot, turnip, onion, celery, etc., around it. Add two cupfuls of water or stock, cover and cook in hot oven three hours, basting occasionally.

Extending the Flavor of Meat.

Stew with dumplings.—Make stew from small pieces of meat and vegetables, cooking it on stove or in fireless cooker. Serve with dumplings made as follows: For a stew using 1 pound of meat mix a little more than one-third cup of flour with one teaspoonful of baking powder and a pinch of salt, work in a rounding teaspoonful of butter and mix with enough milk to form a medium stiff dough. Cut into small pieces and cook in a buttered steamer over a kettle of boiling water or remove enough gravy from the stew to expose the meat and vegetables, and place the pieces of dough on these solid materials to cook.

Meat pie.—Meat pies are made most satisfactorily by first cooking the meat and vegetables as for a stew. Line a pan, earthenware dish, or casserole with biscuit dough rolled fairly thin, put in the meat, vegetables, and gravy, cover with dough, and bake in a hot oven.

Meat turnovers.—Place any chopped cooked meat available on circles of biscuit dough about the size of a saucer. Fold the dough over the meat, crimp the edges, and bake in a hot oven. Vegetables may be combined with the meat filling as desired and the whole may be served with gravy.

Veal or beef birds.—Cut very thin meat into roughly rectangular pieces of a sufficient size for individual servings. Place on each a stuffing of bread crumbs, seasoned with chopped onions and other flavoring vegetables and herbs. Fold or roll up the meat, and skewer in place with toothpicks. Brown the rolls in fat, remove and make gravy from the fat, flour, and stock, if available. Place the rolls in the gravy and cook slowly until tender in a covered baking dish, a steamer, or a fireless cooker.

SPRING CARE OF BEES.

How the Beekeeper Can Aid in Augmenting the Sugar Supply.

In view of the probable shortage of the domestic sugar supply this year, it is highly desirable that beekeepers increase the production of honey to the greatest possible extent. To this end immediate steps should be taken to insure the proper building up of the colonies before the honey flow begins.

Bees need just three things during the spring, and all of these can be readily supplied by the beekeeper. These are plenty of stores, plenty of room for brood rearing, and plenty of protection. The stores should have been provided last fall, but in case colonies are found which are not abundantly supplied a sirup of granulated sugar should be fed. Small quantities from day to day are usually less valuable than a considerable quantity all at one time. This may be given on any warm day, and should, if convenient, be fed in a feeder entirely inside the hive.

Room for breeding usually can best be given by providing each strong colony with two hive bodies as soon as freezing weather has passed. The one-story 10-frame Langstroth hive is usually not large enough for a good queen during the spring, and, of course, smaller hives cramp the colony still more. Extra room will be valueless unless abundant stores are provided and unless the queen is prolific.

In any locality where the temperature drops to freezing in winter bees need winter protection, but many beekeepers fail to realize this. If proper protection has been given during winter, this should be left on the hives as long as possible. Even if colonies have been neglected during the winter, spring protection may help wonderfully in permitting the bees to build up in time for the honey flow. Protection from wind is quite desirable.

If bees have been adequately cared for, spring manipulations usually are not necessary, but every beekeeper should be sure that his bees are well supplied with the three essentials for intensive brood rearing. It is not advisable to spread frames of brood in attempting to stimulate brood rearing.

Every beekeeper should bend every energy this year to increasing the production of honey. He will not only find it profitable, since prices will doubtless be good, but he will be aiding the country by providing a product of high food value when other sugars are scarce.

CORN CULTIVATION.

Primary Object Is to Prevent Loss of Soil Moisture—Important to Keep Fields Free of Weeds.

Corn should be cultivated only when one or more objects will be accomplished by the cultivation and when the total effects will be more beneficial than injurious, according to United States Department of Agriculture Farmers' Bulletin 773. Some beneficial effects are (1) preventing weeds from robbing the corn of soil moisture and fertility; (2) putting the surface in condition to take in rainfall, thus preventing run-off and erosion—losses of water and soil fertility; (3) warming the soil by drying its surface quickly; and (4) saving moisture by checking its capillary rise to the soil surface.

Some injurious effects are (1) breaking corn roots, which otherwise would use some of the moisture of light showers before it evaporates; and (2) forming large clods and holes, thus permitting dry air to enter and dry the soil.

In droughty regions corn cultivation is more essential and requires more good judgment than in most other sections.

The primary object of cultivation is to prevent loss of moisture. Moisture losses are caused by run-off, evaporation, and, most of all, weed growth. A most important object of corn cultivation is the keeping out of weeds. It takes but little stirring of the soil to kill weeds immediately after they germinate and before they have used much soil moisture, but to destroy weeds that are well rooted the soil must be worked deeply and thoroughly. This requires much labor and can not be accomplished without breaking and destroying many corn roots. In many sections, or in seasons when the seed germinates slowly, it is advisable to harrow once or twice or to cultivate after planting before the corn comes up.

Deep cultivation should never be done close to the plants after they are a foot tall, as much harm would be done by breaking the corn roots.

Aside from destroying weeds, timely cultivation is beneficial in preventing the loss of moisture by evaporation and also in hastening the warming of the soil. The loss of soil moisture by evaporation continues much longer from a compact, damp surface than from a loose, dry surface, and the evaporation tends to keep the soil cold.

In northern localities and at high altitudes the conservation of heat is frequently as important as the conservation of moisture. Luckily, both heat and moisture may be conserved by good timely cultivation. Heat is wasted in evaporating or wasting soil moisture. Making the surface loose and dry saves both soil heat and soil moisture.

Cultivating after heavy rains is a good practice. To be most effective, the cultivating should be done as soon as the surface is dry enough to work well. If the soil is allowed to dry until it breaks up cloddy, much moisture will be lost, a good mulch can not be obtained, and harm is more likely to be done to the corn roots. As long as rapid evaporation is taking place, the surface will remain cold and the growth of the corn will be slow. In order to cover large areas quickly, cultivators which work two or more rows are a great advantage.

The number of cultivations necessary and the best time for them depend upon weather and soil conditions. Weeds should not be allowed to grow; a mellow surface should be maintained. In some seasons this may be effectually accomplished with one or two cultivations; in other seasons from four to six cultivations may be necessary.

MAKE BUILDINGS RAT PROOF.

Strip of Mesh Wire and Galvanized Iron Above the Foundation Will Keep Out This Pest.

Rats will do much damage to unprotected stores of food, feed, and supplies this year. All storage houses should be made rat proof. This can be done at little expense with mesh wire and galvanized iron on any building having a rat-proof foundation, say specialists in rural engineering of the United States Department of Agriculture, who thus explain the method:

Wire netting with half-inch meshes is placed all around the outside of the building overlapping the foundation slightly and extending to a height of 30 inches above the ground or floor. At the top of the wire a strip of 8-inch galvanized iron is nailed to the outside of the siding. The bottom of the galvanized iron is 2 inches lower than the top of the wire, making a total height for the wire and iron strip of 36 inches. The iron will halt any rats that may climb up the walls. The rat proofing also must be put along the inside driveway of cribs so that if the doors are left open rats still will be unable to enter the storerooms. Care should be taken not to leave near the walls any objects that might enable rats to jump above the rat proofing.

In buildings that can not be made rat proof, trapping may be employed advantageously, according to specialists in the Bureau of Biological Survey. The common "choke" traps with wooden base and wooden bait pan are recommended rather than those having metal base or pan. These traps should be set as lightly as possible. Oatmeal usually is the most effective bait. Pumpkin and sunflower seeds, corn meal, bits of fish, or toasted cheese also may be used. Poisons, if properly safeguarded, may be used in buildings other than dwellings. In addition to rat-proofing measures, the elimination of old outbuildings and other rat harbors is all important and associated with the above methods and affords the only means of securing permanent immunity from rat depredations. But unless communities take concerted action against this pest, the evil will soon recur. The Department of Agriculture will be glad to supply information in such campaigns of eradication.

Plans for a model crib, including rat proofing and other modern features, may be obtained from the Office of Public Roads and Rural Engineering of the Department of Agriculture. A bill of materials, to enable those interested in the matter to form some idea of the probable expense in their locality of erecting the structure, also will be furnished on request.

ERADICATION OF SWEET CLOVER.

Some farmers hesitate to plant sweet clover on their farms for fear they will have difficulty in eradicating it when the fields are planted to other crops. The results obtained annually by hundreds of farmers are sufficient proof that there is no foundation for such fear; in fact, farmers are experiencing much difficulty in cutting the first crop the second season so high that the plants will not be killed. The new crop of sweet clover, unlike that of red clover and alfalfa, must come from the buds left on the stubble, so when the plants are cut below these buds they will be killed. As sweet clover is a biennial, the plants die as soon as the seed crop is produced.

When the first year's growth of sweet clover is to be turned under for green manure it is recommended that the field be plowed after the plants have made some growth the following spring rather than in the fall of the year of seeding. When the first year's growth is plowed under the same fall many of the plants will not be entirely covered, and these will make a vigorous growth the following spring. When the plowing is delayed until the plants have made some growth the following spring no trouble will be experienced in eradicating them.

The apple is the most important fruit grown in the United States, considering the quantity produced, value of product, and wide distribution of cultivation.

Kohl-rabi leaves, if not too tough, are excellent when cooked as greens, and may be served as a border around the kohl-rabi or as a separate dish.—United States Department of Agriculture.

WATCH YOUR KITCHEN WASTE

A large part of the $700,000,000 estimated food waste in this country is good food which is allowed to get into garbage pails and kitchen sinks

Ask Yourself—"Can It Be Eaten?"

Don't throw out any left overs that can be reheated or combined with other foods to make palatable and nourishing dishes.

Do You Know—

That every bit of uneaten cereal can be used to thicken soups, stews, or gravies?

That stale bread can be used as the basis for many attractive meat dishes, hot breads, and desserts?

That every ounce of skimmed milk or whole milk contains valuable nourishment? Use every drop of milk to drink or to add nourishment to cereals, soups, sauces, and other foods. If you do not want milk to sour, keep it cool, clean, and covered continually. Remember, too, that sour milk, buttermilk, and sour cream are valuable in cookery; so do not waste any. Sour milk and buttermilk can be used with soda in making hot breads, or sour milk can be turned easily into cottage cheese, cream cheese, or clabber. Sour cream is a good shortening in making cakes and cookies and useful for salad dressings and gravies for meat.

That every bit of meat and fish can be combined with cereals or vegetables for making meat cakes, meat or fish pies, and so on, and to add flavor and food value to made dishes?

Do You Know—

That every spoonful of left-over gravy can be used in soups and sauces or as flavoring for meat pies, croquettes, and vegetables?

That every bit of clean fat trimmed from meat and every spoonful of drippings and every bit of grease that rises when meat is boiled can be clarified, if need be, and is valuable in cookery? Don't fatten your garbage pail at the expense of your bank account.

That when meat is boiled, the water dissolves out some valuable food and flavoring material? Save such water for soup or for use in stews or gravies, or for cooking vegetables. Save and keep soup stock. Every professional cook knows that keeping a soup or stock pot is an essential economy.

Do You Know—

That valuable food and flavoring get into the water in which rice and many vegetables are cooked? Use such water for soup making if it has an agreeable flavor. Don't pour nourishment down the sewer.

That careless paring of potatoes or fruits often wastes as much as 20 per cent of their food material?

That the outside leaves of lettuce and the tops of many vegetables make desirable cooked "greens" or even salads?

To Be an Efficient Home Manager You Must Know Your Job

Make it your business to know what foods and how much food your family needs to be efficient. Learn how to make the most of the foods you buy.

Write to-day to the U. S. Department of Agriculture, Washington, D. C., or to your State agricultural college for bulletins telling you about the nature and uses of foods and how to feed your family economically, and get the greatest nourishment out of every pound of food that comes into your home.

DEMONSTRATE THRIFT IN YOUR HOME

MAKE SAVING, RATHER THAN SPENDING, YOUR SOCIAL STANDARD

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., MAY 9, 1917. No. 40

USE NEW LANDS.

This Offers the Largest Opportunity for Increasing the Acreage of the Present Year's Crop.

The acreage of certain crops this year can be greatly increased by breaking new land where such land is near farms already in operation, according to the specialists of the United States Department of Agriculture. Assuming that all cultivated land will continue to be farmed, this use of new land now offers the largest opportunity for increased acreage of 1917 crops. This applies to the prairie region in general, but principally to the Great Plains. The breaking up of new land provides for crops that would otherwise be put on present cultivated land. If these new lands should not be ready in time for crops of the present season, they should be in excellent condition for wheat next fall or for wheat or some other crop next spring. The farmer is not urged to use new land to the neglect of his usual farm operations or to attempt more than he can carry out in the way of breaking new land with his available labor and equipment.

Crops Adapted to New Breaking.

The crops that are known to do best on new breaking in the Great Plains and prairie regions generally are flax, corn, sorghum (kafir, milo, sorgo, or sweet sorghum), broom corn, and beans. Such vine crops as squashes, pumpkins, etc., can sometimes be grown to advantage with corn, kafir, or other tilled crops where live stock is available to utilize them before freezing weather in the fall. In some cases the total production per acre can be increased by growing two crops together, such as corn and pumpkins where these are adapted.

Flax.—Flax is adapted to the northern plains, especially to Montana, the Dakotas, and western Minnesota. The acreage of flax can probably be increased to a great extent on new land in this district. It can be sown late in the season and is well adapted to newly broken land; in fact, it is the crop most largely used on breaking in the region where flax is grown.

Sorghum.—The sorghums (kafir, milo, sorgo or sweet sorghum) should be used extensively in the Great Plains from Nebraska southward. These crops are better adapted than corn to districts where the rainfall is low. Where corn often fails on account of drought, the sorghums may make a fair crop. The acreage of sorghum can be largely increased on new breaking, where old ground is already taken for other crops, at comparatively small cost.

Broom corn.—Broom corn can be grown on the sod land and leave that much acreage for other crops. It is adapted to the southern half of the Great Plains.

Beans.—Beans are a good crop on new breaking. They are being used with good results in Colorado and the southern plains. The Mexican or Pinto bean is largely employed and is already increasing greatly as a real staple crop, similar to cereals.

Seed and Labor.

The two things that may interfere with this great addition to the food crop acreage are lack of seed and labor. Fortunately not much seed will be required for corn and the sorghums—from 6 to 8 pounds per acre for the former and from 3 to 5 pounds for the latter. In the extreme southwestern plains the soil is sometimes loose enough to be disked and harrowed and thereby put into good condition like old ground.

Drought.

The farmer must remember that chances of loss from drought still exist even if newly broken land is used. There is, however, the advantage in this means of increasing the acreage of crops this year—that sod land conserves moisture more than old ground.

Methods of Planting Sod Crops.

The methods of planting these crops, which are usually quite different from those used on old ground, will depend upon the kind of crop and the condition of the sod in the locality. Sometimes the seed is dropped by hand ahead of the breaking plow in about every third furrow in such a position that it will come up between the furrows. Sometimes, while the sod is freshly turned, the seed of row crops may be planted with a two-horse planter having rolling cutters in front of the shoes, or if this machine is not available the seed may be planted with a hand corn planter. Other methods will suggest themselves or may already be in use in different localities.

The 1915 olive crop of California is estimated to have produced 1,000,000 gallons of oil and 1,800,000 gallons of packed olives.

KEEP BREEDING SOWS.

Preserve Good Sows for Breeding Purposes—Urgent Need for Increased Pork Production.

A sow is a good investment. This is true even in these strenuous times of high prices of food concentrates, say specialists of the United States Department of Agriculture. The quotations on these feeds are controlled to a considerable extent by the price at which meat animals sell. Hence concentrates usually command a high figure when hogs on the hoof at large packing centers sell at more than 16 cents per pound. However, record prices for swine as well as feed concentrates have been a great incentive to farmers to "cash in" all the hogs available. That many sows have been included is evident from the fact that on April 1 the correspondents of the Bureau of Crop Estimates reported approximately 3 per cent fewer sows on farms in the United States than a year before. Further, this is the first year that the supply has not increased since 1913.

At this time the marketing of a sow that can be or has been bred is fairly comparable to "killing the goose that laid the golden egg." Although the fecundity of swine is well appreciated by farmers, at times sows are sacrificed when a little forethought would cause them to be retained. Breeding sows multiply five or six times as rapidly as other meat animals. They have an average litter of five or six pigs and may be bred twice a year, although three times in two years accords more with current farm practice. The litters increase in size, on the average, until sows are 5 or 6 years old. However, a large proportion of the sows are sold after producing one or two litters and before they have reached the period of greatest usefulness. Occasionally sows are unsuitable for breeding because of their clumsiness, "high" condition, inactivity, or barrenness; and these, of course, go to market when of proper weight, but the total sows of this class is a mere bagatelle.

In these days when labor is high and also scarce on many farms, the hog may afford "a way out." Hogs utilize refuse and waste grains, damaged grains, and garbage; garnering grain behind cattle or shattered grain in harvest fields, and utilizing slaughterhouse by-products and dairy by-products. They are also largely self-feeders. The modern farm "cafeteria" gives a pig a

chance to make a hog of himself more quickly than he can by the hand-fed route, and it has the added merit of being the cheapest way of producing pork. A sow when she is not developing a litter or nursing pigs can in summer time be placed in a pasture and given very little grain. In winter, possibly the cheapest maintenance ration is a combination of grain and hay, such as corn, wheat, rye, or barley, and alfalfa, clover, cowpeas or soy-bean hay. The grain should be limited to 1 or 2 pounds per hundred pounds live weight per day. Sows should be given all the hay they will clean up. Sows which show exceptionally run-down condition from suckling their pigs should be separated from the herd and fed grain until they regain breeding condition. Where pastures are very luxuriant it is possible to carry breeding sows on pasture alone, but the most palatable hay will not keep sows in good breeding condition if fed alone.

Breeding sows are at a premium and the demand for young stock is unprecedented. The hog buyers state in their reports that they are compelled to take anything that looks like a hog. The fluctuation in the number of hogs in the United States is subject largely to the fluctuations in the financial condition of the country. The high prices paid for hogs are a big inducement to farmers to market their hogs, and as stated before, the high prices of corn caused them to cut loose during the latter part of the year. The high prices paid for hogs and an increasing export trade are the two main factors which make the hog business especially attractive at the present time. Millions of farmers would purchase sows to farrow this coming spring if they could, but this is almost an impossibility. Those farmers who are fortunate enough to have retained their breeding sows will play an important rôle in placing spring pigs on the market. The spring gilts from these litters should not be sent to market for meat purposes, but should be retained or sold only for breeding purposes in order to augment the pig crop next year.

The strong flavor and odor of all the members of the onion family are due to the presence of allyl sulphid, an oil-like organic compound of sulphur. The flavor-yielding material is very volatile and is broken down by heat to some extent. Consequently, the cooked vegetable has a milder flavor than the raw.

Fruit exports from the United States during 1915 were valued at $34,229,906. The values of the principal fruits exported were: Apples (dried, green, or ripe), $11,358,124; apricots, dried, $2,241,061; oranges, $3,851,013; prunes, $3,274,197; and raisins and other dried grapes, $1,718,547.

USE MORE LIME.

Statement of Assistant Secretary Vrooman, Urging upon Farmers the More General Use of Lime.

Is it too late materially to increase our national food supply this spring?

Not if our farmers in the eastern half of the country will promptly resort to the use of the cheapest and quickest known agency for speeding up national production of foodstuffs—namely, lime.

Prices of most commercial fertilizers at present are high. Potash is almost unobtainable. Only by most scrupulous conservation of stable manure, and an increased use of legumes as green manure, and of ground rock phosphate, can the commercial fertilizer shortage be met, even temporarily. There remains one thing, however, that may be done to increase yields, which costs no more now than it did before. It may safely be said, I believe, that if all sources of artificial chemical fertilizers failed, our total farm output in many sections could not only be maintained, but even increased for a considerable time simply by the application of lime to acreages that now are low in yield or lying fallow because they are too sour to grow profitable crops. Lime can and should be put on all sour land. By a plentiful use of lime we can, figuratively speaking, make our "war bread" of stones.

There is perhaps no considerable section of the United States without some local supply of limestone, marl, or oyster shells. Ground limestone for direct application to the soil costs, delivered on the nearest siding, from $1 per ton up, depending on the length of the haul. If crushed limestone is not available, burned lime, either ground or hydrated for agricultural use, or the ordinary lump lime carried by all dealers in building materials, may be used in emergency, though lime in this form is frequently more expensive. On the other hand, if burned or hydrated lime is used the applications should be less than one-half those of ground limestone.

Thus, there is available for almost every farmer, at normal cost in spite of war conditions, a material which, for the time being, may avail to increase our agricultural output enormously. The initial returns from the application of lime to sour land are sometimes remarkable. An investment in limestone often pays a dividend of 100 per cent or more the first year, if care is taken at the same time to maintain the organic content of the soil.

It is the duty of American farmers, in this national crisis, to make the most of this, our cheapest and most easily available agency for speeding up production. War or no war, a carload of crushed limestone where needed is always money in the farmer's pocket at the end of the crop year. And a carload of limestone, judiciously used by each farmer whose land is too acid, will augment our supply of breadstuffs by a surprising number of millions of bushels.

FEEDING DEMONSTRATION.

Results Indicate Possibilities of Feeding Steers in Southern States.

The following report of the results obtained from the feeding of 26 steers at Pocahontas, Miss., is indicative of the possibilities of steer feeding in that section. This is especially true when considering the fact that the cattle used in this test were of native origin. As the quality and grade of the cattle continues to improve through the constant use of pure-bred beef sires, still better results may be expected.

This test was conducted on the farm of W. H. Lane, Pocahontas, Miss., and included 26 native steers. It extended over a period of 100 days, commencing October 26, 1916, and ending February 3, 1917. On October 26, the 26 steers weighed 19,280 pounds, an average weight per head of 742 pounds. Their valuation at this time was $5.50 per hundredweight or $1,060.40. The average daily ration per steer consumed during this period was 2½ pounds of cottonseed meal and 40 pounds of corn silage. The total amount of feed consumed by the 26 steers was 3.25 tons of cottonseed meal and 52 tons of corn silage. The cottonseed meal and corn silage were valued at $35 per ton and $5 per ton, respectively. The total cost of feeds consumed by the 26 steers during the 100 days was $156 for the corn silage and $130 for cottonseed meal.

During this period the cattle made a total gain of 3,900 pounds, or an average gain per head of 150 pounds. This made an average daily gain per steer of 1.5 pounds. While this gain is not large, it is very satisfactory considering the fact that the average amount of concentrate consumed per steer was but 2.5 pounds of cottonseed meal daily. This large a gain for the amount of cottonseed meal consumed is probably attributable to the quality of the silage, which is given a valuation of $5 a ton. Three dollars per ton is usually considered a fair valuation for corn silage in most parts of the South. The cost of each pound of gain was 9.58 cents.

At the end of the test, the 26 steers were shipped to Natchez, where they were sold for $8.45 per hundredweight, or a margin between selling price and cost of $2.95 per 100 pounds. The total final weight of the steers on the Natchez markets was 23,180 pounds. They brought $1,958.71. The average final weight per head was 891.53

pounds, and the average selling price per head was $75.33. Deducting the initial cost plus the cost of feeds for 100 days and the freight charges from Pocahontas to Natchez ($22), the 26 steers made a net profit of $590.31, or $22.70 per head.

TWO NEW DIVISIONS.

Tuberculosis Eradication and Tick Eradication Divisions Created in Bureau of Animal Industry.

In order to handle to better advantage the work of combating tuberculosis of cattle and to carry on other activities for the conservation of the animal resources of the country, the Secretary of Agriculture has created two new divisions in the Bureau of Animal Industry. The changes became effective May 1.

The Tuberculosis Eradication Division, one of the newly created agencies, will have charge of the work of testing cattle to determine the presence or absence of tubercular infection. This work has been greatly expanded by a recent appropriation by Congress. The second new agency, the Tick Eradication Division, will be devoted exclusively to the work of eradicating the cattle fever tick in the South. The changes will leave the Field Inspection Division, which now handles most of this work, free to devote itself to the enforcement of cattle transportation laws and the combating of miscellaneous animal diseases. This division will have charge, as in the past, of the work of conducting the campaigns waged by the Department of Agriculture against outbreaks of animal maladies, such as foot-and mouth disease. The removal of the other branches of the work to the newly created agencies will expedite the performance of these important tasks.

The creation of the two new divisions in the Bureau of Animal Industry will affect also the Quarantine Division of the bureau. Intrastate testing of cattle for tuberculosis is now performed by this latter division. This work, with the interstate testing, will be performed in the future by the Tuberculosis Eradication Division. The Quarantine Division, after May 1, will be devoted solely to a supervision of the exportation and importation of animals, animal products, and certain feeds capable of carrying the infection of animal diseases.

Dr. Robert A. Ramsay, Chief of the Field Inspection Division, will become Chief of the Tick Eradication Division. Dr. John A. Kiernan, at present a veterinary inspector in the Field Inspection Division, will become Chief of the Tuberculosis Eradication Division. Dr. Arthur W. Miller, also a veterinary inspector of the Field Inspection Division, will become Chief of that division, while Dr. R. W. Hickman will continue as Chief of the Quarantine Division.

STOP BREEDING FLIES.

Fertilizer Mixtures Increase Value of Barnyard Manure While Eliminating Maggots.

That flies may be prevented from breeding in barnyard manure by adding to the substance the common fertilizer ingredients, calcium cyanamid, acid phosphate, and kainit, has been demonstrated by recent experiments made by the Bureaus of Entomology and Chemistry of the United States Department of Agriculture. The valuable feature of the discovery is that by the new treatment the fertilizing value of the manure is increased at the same time that its menace to health is lessened. Under treatments for preventing flies breeding in manure heretofore in use, the fertilizing value of the substance has been decreased or not affected.

The fertilizer ingredient indicated by the experiments to be most effective in preventing the development of fly maggots in manure is calcium cyanamid, a compound in which nitrogen from the air is fixed by electricity. The investigations showed the value, however, of adding other ingredients to balance properly the chemical effects and to prevent waste of fertilizing elements. Acid phosphate was found to be the supplemental ingredient most needed, but a still better fertilizer was obtained when kainit was used also. The three substances, cyanamid, acid phosphate, and kainit, give a fertilizer complete in itself, containing nitrogen, phosphorus, and potash, as well as lime.

As a result of the experiments, the department's specialists advocate the use of mixtures of 1 pound of cyanamid and 2 to 4 pounds of acid phosphate per 4 square feet of surface exposed, when the manure is in boxes or pits. When the manure is in open piles the rate of application should be 4 pounds of cyanamid and 4 or more pounds of acid phosphate per 8 bushels of manure. To be sure of retaining all the fertilizing elements, more than 4 pounds of acid phosphate are recommended. When kainit is used it may replace a portion of phosphate.

When manure from pits treated as suggested above is applied as fertilizer, the rate should be 9 tons per acre to provide the amount of cyanamid calculated to be most effective. Manure treated in open piles should not be applied in excess of 2½ tons per acre, since it contains a much higher percentage of the commercial fertilizer than the pit-treated product.

Earlier experiments made by the department's specialists prove that both borax and hellebore are effective in preventing flies from breeding in manure. The use of borax was found to constitute the cheapest effective treatment, costing one-half cent per bushel of treated manure. This treatment may lessen the value of the manure for agricultural purposes, however. The hellebore treatment was found to cost about 1 cent per bushel of manure, and neither lessens nor increases the fertilizing value. The treatment with fertilizer ingredients just evolved costs from one-half cent per bushel of manure when treatment is in pits to 1.8 cents per bushel when the treatment is in open piles. This cost is based on the normal selling prices of the fertilizer ingredients, and is materially lessened in effect by the increased fertilizing efficiency of the treated manure. Not only is the value of the manure increased by the fertilizer ingredients added, but also their presence prevents the waste of certain valuable elements usually lost from untreated manure.

In their most recent experiments in the treatment of manure, the department's specialists tried numerous other substances, including sulphur and various plant infusions. From none of these, however, were the results as satisfactory as those obtained with the use of borax, hellebore, and the fertilizer mixtures. Acting on the data gathered from the groups of experiments carried on since 1913, the specialists recommend the use of borax for preventing the breeding of flies in manure when the latter is not to be put to agricultural use, and the use of either the fertilizer mixtures already described or hellebore when the manure is to be used agriculturally.

"USE YOUR TRACTOR."

"Help your neighbors" is the keynote of a special appeal to tractor owners issued to-day by Assistant Secretary of Agriculture Carl Vrooman.

"Every farmer who owns a tractor," he says, "owes it to his country this spring to do all the custom or exchange work he can do without neglecting his own work. Every hour that his tractor would otherwise be idle it ought to be at work helping a neighbor who is behindhand with his plowing or harrowing. Make your outfit work from dawn to dark; make it work all night if you have enough operators to fill the shifts. The acreage to be harvested this fall hangs on the plow. Don't let an acre that might otherwise be planted go untilled because your tractor is in the shed. Help your neighbors and thus do your part in strengthening the allied lines on the battle fronts of Europe."

Weather news is now received regularly by wireless at 270 amateur radio stations located in nine of the Northern and Western States. In this way the wireless operator is enabled to give his neighborhood the weather forecast as soon as it is issued.

RAISE MORE HOGS.

One of the Most Important Animals for the General Farmer to Raise, Both for Meat and for Money.

No branch of live-stock farming is more productive of satisfactory results than the raising of well-bred swine, if conducted with reasonable care, according to the specialists of the Bureau of Animal Industry, United States Department of Agriculture. Hogs fit into the modern scheme of farming on nearly every farm, and are one of the most important animals to raise both for meat and for money. They require less labor, less equipment, and less capital, make greater gains per hundred pounds of concentrates fed, reproduce themselves faster and in greater numbers, and give a quicker "turnover" of money than any other animal except poultry. Farmers of the South and West particularly have awakened to the merits of the hog and are rapidly increasing their output of pork and their bank accounts.

MEAT BY THE HOG ROUTE.

The meat suply of the country can be increased more quickly by the "hog route" than by any other. The country's need to augment its supply is great, but prevailing high prices alone should be sufficient inducement to farmers to raise more hogs. The prospect of success never was brighter. The high prices ruling in all markets show that the demand for pork is in excess of the supply.—United States Department of Agriculture.

The hog has no rival as a consumer of by-products and numerous unmarketable materials which but for him might be wasted. Kitchen refuse, not only from farms but also from hotels and restaurants, when cooked before being used makes an excellent feed.

The value of skim milk as a hog feed is known on every farm, though not always fully appreciated. In the neighborhood of many large dairies pork production is a very prominent and lucrative supplement to the dairy industry.

To prevent tuberculosis, all milk and milk products should be cooked before being fed to hogs. To control hog cholera, use sanitary precautions and anti-hog-cholera serum treatment.

Give your hog every chance to become meat.

The hog is also a large factor in cheapening the production of beef. Hogs are placed in the cattle feed lots to utilize the corn and other feeds the cattle have failed to digest and which otherwise would be wasted. Hogs following steers in many cases have increased the profit per steer by from $6 to $9. Hogs should not be allowed to follow dairy cattle unless the cattle are tuberculin tested.

DEMAND IS KEEN.

Disease, such as cholera, has been taking a smaller toll the past season than in recent years; more pure-bred and high-grade hogs are available than ever before; prices of hogs are now past the 16-cent level; demand for pork for home consumption and for export is keen. All of which means that the farmer who does not raise hogs is losing a chance to increase the supply of pork and thus serve the country and at the same time expand a profitable phase of farming.—United States Department of Agriculture.

ASSISTANTS TO THE SECRETARY.

Dr. B. T. Galloway recently was appointed Assistant to the Secretary of Agriculture for an indefinite period. His duties are primarily to act as the representative of the Department of Agriculture with representatives of other departments in matters connected with the Council of National Defense.

Mr. R. A. Pearson, president of the Iowa State College of Agriculture, Ames, Iowa, also has been appointed Assistant to the Secretary. He arrived in Washington April 21, and will give the Secretary the benefit of his advice and assistance for an indefinite period. He will especially assist the department in keeping in touch with the State boards of food production and conservation.

Dr. Galloway was born in Millersburg, Mo., October 16, 1863. He graduated from the University of Missouri in 1884, and received the degree LL. D. from that institution in 1902. He has been connected with the United States Department of Agriculture since 1887, with the exception of a brief period from 1914 to 1916, when he served as dean of the School of Agriculture at Cornell University. Dr. Galloway was Chief of the Bureau of Plant Industry from 1901 to 1912, and Assistant Secretary of Agriculture from 1913 until he became connected with Cornell University.

President Pearson was born at Evansville, Ind., April 9, 1873. He graduated from Cornell University in 1894 and received the degree M. S. from that institution in 1899. He served as Assistant Chief of the Dairy Division of the United States Department of Agriculture from 1895 to 1902, and as Commissioner of Agriculture of the State of New York from April, 1908, to February, 1912. He has been president of the Iowa State College of Agriculture since March, 1912.

Sweet clover usually will respond to applications of fertilizers and manure.

SAVE YOUR BOTTLES.

Shortage of Cans and Jars Threatened—Preserve Jams, Jellies, and Fruit Juices in Bottles.

The home canning specialists of the United States Department of Agriculture urge every housekeeper to save bottles—especially wide-necked ones—for putting up fruits, preserves, jellies, jams, and fruit juices. Saving of bottles is highly important, they say, as there threatens to be a serious shortage of regular jars and preserving cans this season.

The fruit products named, if sealed with corks and paraffin, can be kept perfectly in these makeshift containers. Jellies, jams, and preserves can be kept even in ordinary drinking glasses, by the use of paper and paraffin. Fruit juices should be packed in ordinary small-necked bottles.

Vegetables, soups, and meats, on the other hand, to keep must be sealed by the usual fruit-jar or tin-can packing methods. Reserve regular containers for foods that can not be packed in bottles.

A serious shortage of preserving jars and cans is threatened.

Glass bottles—especially wide-necked ones—are useful for putting up fruits, jellies, and preserves.

Put up fruit juices in ordinary bottles.

Reserve regular preserving jars and cans for canning vegetables, soups, and meats.—United States Department of Agriculture.

The specialists are also urging all members of canning clubs and others not only to can products, but to dry and evaporate all such products as apples, pumpkin, and squash. They advise strongly that if containers are scarce locally, those in stock should be used to preserve perishable products which have the highest nutritive value. Nothing should be packed in jars or cans which can be conserved effectively in other ways.

Candy containers or other glass jars with screw tops or glass stoppers, and in fact any receptacle of glass, crockery, or porcelain, can be sealed with cork or paper and paraffin.

Large tin canisters or tin cans with removable covers, provided the body of the container is air and water tight, will be found useful in canning certain fruit products. Such containers can be sterilized and their covers hermetically sealed in place with solder or wax.

Sweet clover is being cultivated in practically every State in the Union. At the present time the largest acreage is found in the western North-Central States and in the Mountain States.

[TREASON AND MISPRISION OF TREASON.]

By the President of the United States of America.

A PROCLAMATION.

Whereas, all persons in the United States, citizens as well as aliens, should be informed of the penalties which they will incur for any failure to bear true allegiance to the United States;

Now, Therefore, I, WOODROW WILSON, President of the United States, hereby issue this proclamation to call especial attention to the following provisions of the Constitution and the laws of the United States:

Section 3 of Article III of the Constitution provides, in part: "Treason against the United States, shall consist only in levying war against them, or in adhering to their Enemies, giving them Aid and Comfort."

The Criminal Code of the United States provides:

SEC. 1. Whoever, owing allegiance to the United States, levies war against them or adheres to their enemies, giving them aid and comfort within the United States or elsewhere, is guilty of treason.

SEC. 2. Whoever is convicted of treason shall suffer death; or, at the discretion of the court, shall be imprisoned not less than five years and fined not less than ten thousand dollars, to be levied on and collected out of any or all of his property, real and personal, of which he was the owner at the time of committing such treason, any sale or conveyance to the contrary notwithstanding; and every person so convicted of treason shall, moreover, be incapable of holding any office under the United States.

SEC. 3. Whoever, owing allegiance to the United States and having knowledge of the commission of any treason against them, conceals and does not, as soon as may be, disclose and make known the same to the President or to some judge of the United States, or to the governor or to some judge or justice of a particular State, is guilty of misprision of treason and shall be imprisoned not more than seven years, and fined not more than one thousand dollars.

SEC. 6. If two or more persons in any State or Territory, or in any place subject to the jurisdiction of the United States, conspire to overthrow, put down, or to destroy by force the Government of the United States, or to levy war against them, or to oppose by force the authority thereof, or by force to prevent, hinder, or delay the execution of any law of the United States, or by force to seize, take, or possess any property of the United States contrary to the authority thereof, they shall each be fined not more than five thousand dollars, or imprisoned not more than six years, or both.

The courts of the United States have stated the following acts to be treasonable:

The use or attempted use of any force or violence against the Government of the United States, or its military or naval forces;

The acquisition, use, or disposal of any property with knowledge that it is to be, or with intent that it shall be, of assistance to the enemy in their hostilities against the United States;

The performance of any act or the publication of statements or information which will give or supply, in any way, aid and comfort to the enemies of the United States;

The direction, aiding, counseling, or countenancing of any of the foregoing acts.

Such acts are held to be treasonable whether committed within the United States or elsewhere; whether committed by a citizen of the United States or by an alien domiciled, or residing, in the United States, inasmuch as resident aliens, as well as citizens, owe allegiance to the United States and its laws.

Any such citizen or alien who has knowledge of the commission of such acts and conceals and does not make known the facts to the officials named in Section 3 of the Penal Code is guilty of misprision of treason.

And I hereby proclaim and warn all citizens of the United States, and all aliens, owing allegiance to the Government of the United States, to abstain from committing any and all acts which would constitute a violation of any of the laws herein set forth; and I further proclaim and warn all persons who may commit such acts that they will be vigorously prosecuted therefor.

In witness whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington this sixteenth day of April in the year of our Lord one thousand nine hundred and seventeen, and of the Independence of the United States of America the one hundred and forty-first.

[SEAL.]

WOODROW WILSON

By the President:

ROBERT LANSING,
Secretary of State.

PREVENTING EROSION.

Washing of Fertile Soil in Sloping Fields Can Be Stopped or Greatly Lessened by Terracing.

Many of the farms of the country which are being ruined gradually or rapidly by the washing away of soil from sloping fields and cultivated hillsides may be saved and kept in a cultivable condition by the use of terraces. Terraces make possible either the holding of the rich, easily eroded surface soil in place, or else limit its movement to short distances from which it can be thrown back by plowing. The various systems of terracing, and the soil and other conditions which make a particular type of terrace desirable, are described in a recent publication of the United States Department of Agriculture, Bulletin No. 512, "Prevention of the Erosion of Farm Lands by Terracing," by C. E. Ramser. The bulletin is based on studies of field conditions and terrace systems now in use in the United States.

While terracing has been successfully employed in the United States on fields sloping as much as 30 feet to the 100 feet, and is practiced in Europe and Asia on even steeper grades, the Department of Agriculture does not recommend the use of terraces on slopes greater than 20 feet to the 100 feet, with a view to making the land available for cultivation. Hillsides with slopes greater than 20 feet to the 100 feet should be seeded for pasture or planted to timber.

The Purpose of Terracing.

The purpose of terracing is so to shape the land in fields with a pronounced slope that rain water, instead of draining from top to bottom of the incline, wearing gullies and washing the fertile top soil entirely from the field, will be confined either to nearly level zones or else to strips of sloping land having relatively small area. The theory of terracing is that the water accumulating in these restricted zones is restrained, so that much of it soaks into the soil, while the surplus is carried away at reduced velocity along the terraces and disposed of where it will do no damage.

Bench Terraces.

The original system of terracing which is used almost exclusively in Asia, and to a great extent in Europe, is a series of benches separated by almost perpendicular rises. Water usually is prevented from flowing over the edges of the benches by small ridges or shoulders. Bench terraces are classified as sloping or horizontal, according as they have or have not slope between rises. In both cases the rises are abrupt. Horizontal bench

terraces are little used in the United States, but sloping bench terraces are common. With these two types of terraces there is much waste land on the face of the rises and near the edges, and it is impracticable to get heavy farm machinery from one bench to another. The specialists of the Department of Agriculture recommend them only when it is necessary to cultivate slopes approaching 20 per cent.

Broad-Base Level-Ridge Terraces.

Wherever conditions permit, what is known as the broad-base level-ridge terrace system should be used. Under this system there is no waste of land and no surface movement of water from the zones, and farm machinery may be transferred from terrace to terrace with little difficulty. Such terraces may be used to best advantage on fields with open, pervious soils and with slopes up to 15 per cent. When carefully designed, constructed, and maintained, however, this system of terraces can be used on any soil and on slopes somewhat greater than 15 per cent.

When broad-base level-ridge terraces are constructed, the portion of the field between the terraces is left at its original slope. Ridges with bases at least 10 feet wide and heights of at least 1¼ feet are thrown up at intervals to stop and hold surface water. These ridges run across the face of a hill or completely around it at exactly the same level. They therefore wind about on contour lines, turning closer into the hill at depressions and farther out when shoulders are encountered. The ridges, if not carried completely around hills, may be brought to an end at natural watercourses or at ditches constructed along property lines. Under such circumstances a portion of the water drains away. For the most part, however, the water falling on each section of the slope is caught and held by the next lower ridge, and eventually soaks into the ground. Such surface soil as is washed down against the ridges can be worked gradually up the slopes by proper methods of plowing.

Broad-base level-ridge terraces are sometimes supplemented with tile drainage systems. Such combined systems constitute the ideal treatment of land subject to erosion, according to the specialists of the Department of Agriculture. The tile usually is laid along natural gulleys or draws and provision made at each ridge for admitting water. Laterals may be run behind each ridge; these facilitate the removal of water.

Graded Terraces.

Where the soil of a sloping field is relatively impervious or where the rainfall is particularly heavy a modification of the broad-base level-ridge is used which has a slope along the direction of the terrace. This type is known as the Mangum terrace. Under this system the ridges slope gradually, and the excess water is carried from the field along them at a reduced velocity. Slight erosion along the ridges usually occurs with such a terrace system, and the grade should, therefore, be kept to the minimum which will permit efficient removal of the water. A fall of one-half foot per 100 feet usually is considered the maximum safe grade. The ridges of Mangum terraces may slope at a uniform rate or may be variably graded. In the latter case the grade is increased at intervals along the terrace to accommodate the continually increased discharge from the enlarging drainage area. It is customary, therefore, to construct these ridges with practically no fall for the first 100 or 200 feet and gradually to increase the fall at intervals of several hundred feet until the maximum grade is reached at the outlet. It is essential in the Mangum terrace system to have some sort of watercourse or ditch to carry off the water from the ends of the ridges.

Narrow-base terraces of both the level and graded types have been tried in various sections of the country, but have been found for the most part to be unsatisfactory. Such terraces often break with slight accumulations of water, and at such times augment rather than lessen erosion down the hillsides.

A terrace is susceptible to failure until it has become thoroughly settled. To facilitate settling it is best not to cultivate a terrace the first year, but to sow it to a cover crop. The best results are obtained where crop rows are run parallel with the terraces.

Since the primary purpose of terracing is to hold the soil of the farm in place and thereby both maintain its fertility and render possible an increase of fertility by proper farming methods, all of the benefits, such as greater yields and land values, which result from the preservation and increased fertility of the soil may be attributed directly to the practice of terracing. In short, the terracing of farm lands saves the soils, the most substantial and valuable asset of the country.

POULTRY MITES.

How to Free Poultry Houses—Crude Petroleum Sprays and Sanitary Measures Make Yards Habitable.

Lice by day and mites by night furnish the unhappy condition of poultry kept under insanitary surroundings. Treatments for lice are not effective for mites because the latter work only at night, making raids on the fowls from their hiding places in crevices of the roosts and cracks of the building. To destroy mites and keep the flock free of their depredations, insecticide sprays and a sanitary building are necessary. In "Mites and Lice on Poultry," Farmers' Bulletin 801, F. C. Bishopp and H. P. Wood, of the Bureau of Entomology, United States Department of Agriculture, tell how a complete renovation can be done.

The presence of mites is indicated by small black and white specks on the roosts—the excrement of these insects. The first step is to get rid of the hiding places so far as possible. The roosts should be taken down and all unnecessary boards and boxes removed. In heavily infested houses the mites are to be found in all parts of the building, including the roof. Where they are less numerous, the infestations usually are confined to the roosts and nests and the walls immediately adjacent. For small coops a hand atomizer will suffice for applying insecticides as sprays, but for larger houses a bucket pump, knapsack sprayer, or barrel pump is desirable. A rather coarse spray should be applied from all angles and thoroughly driven into the cracks. The floor also should be treated, as many mites fall to the floor when the roosts are being removed.

Of the several materials that have proved effective, one of the so-called wood-preservers, consisting of certain coal-tar products, known as anthracene oil with zinc chlorid added, has given particularly good results. Its repelling power lasts for months. The cost is about $1 a gallon, but twice the quantity may be obtained by reducing with equal parts of kerosene.

Crude petroleum is almost as effective, retains its killing power for several weeks, and in most localities is very cheap. It will spray better if thinned with one part of kerosene to four parts of crude oil.

Both of these materials often contain foreign particles which should be strained out before spraying is begun. It has been found that one thorough application of either of these materials will completely eradicate the mites from an infested chicken house, but ordinarily it is advisable to make a second application a month after the first, and in some cases a third treatment is required. These subsequent applications may be made with a brush, using the materials pure and covering only the roosts, their supports, the walls adjoining, and the nests if they are infested. This method of application is effective for the first treatment also if the houses are not heavily infested. Poultry should be kept out of the treated buildings until the material is well dried into the wood.

Used as a dip, crude petroleum will also destroy the small bite which causes scaly leg. In dipping for this mite *the solution should not be allowed to reach the flesh above the infestation or to get on the feathers.*

Sheep sorrel is not often eaten by live stock owing to its sour taste, but it is well not to pasture horses or sheep on sorrel as the weed is somewhat poisonous to these animals.

TO PLAN THREE MEALS.

How the Housewife May Reduce the Cost of Serving Nutritious Food to the Family.

Housewives in many cases can reduce the cost of supplying their tables without reducing the nutritive value of the food served by giving more thought than usually is given to the selection, preparation, and combination of foods. In fact, where carelessness has been the rule (and carelessness is not related to the size of the income), the specialists of the United States Department of Agriculture say careful planning may make possible both a reduction of cost and an increase in nutritiveness and palatability. If any changes are to be brought about in the menu to which a family has been accustomed, however, by eliminating certain articles or substituting less expensive ones, care should be taken that the resulting diet is rational; that is, that it does not contain, on the one hand, too great a proportion of foods of any one type, such as meats and meat substitutes, or starch, sugars, and fats, or vegetables and fruits; and that, on the other hand, it is not deficient in any of these types of food.

In general, habit and custom, shaped by normal appetites, have led to the general adoption of adequate and varied diets in most families where the means are sufficient for any range of choice. Thus, when meat—a food rich in nitrogen—is eaten, potato, rice, bread, or some other starchy food, and fruits and vegetables, and perhaps foods of the other types, usually are served with it. If a person's food habits are good he will eat a reasonable quantity of all the foods provided and obtain a varied meal and not a one-sided one, as might otherwise be the case.

The lists of foods given at the end of this article are intended to show different types of food and different examples of each type. If the foods combined in the diet are chosen according to these types—that is, according to the purpose each group serves in the body—and are eaten in proper proportion, the meals will furnish all the kinds of nourishing elements which the body needs. The five types or groups are:

(1) Foods depended upon for mineral matter, vegetable acids, and body-regulating substances, such as fruits and succulent vegetables.

(2) Foods depended upon for protein, such as milk, eggs, meat, and dried legumes.

(3) Foods depended upon for starch, such as cereal breakfast foods, flours, meals, and foods made from them.

(4) Foods depended upon for sugar, such as sugar, molasses, sirups, honey, jams, thick preserves, dried fruits, sweet cakes, and desserts.

(5) Foods depended upon for fat, such as butter, cream, salad oil, and other table fats, lard, suet, and other cooking fats and oils, salt pork, and bacon.

In order that the meals may supply all the needed nutritive elements, one must make sure that all groups are well represented; not necessarily at every meal, but when the family diet is considered day by day and week in and week out. Quantities should vary, particularly of the energy-yielding foods, for persons engaged in different pursuits necessitating different amounts of exercise. The heavier the work the more food is needed. In planning meals in accordance with the method here suggested, choose only a few dishes and make sure that the different groups are represented in the daily fare. Foods in groups 1 and 3 are less expensive, as a rule, than those in group 2, and for this and other reasons should be used freely as a basis of the diet, with sufficient amounts of foods from groups 2, 4, and 5 to round out the meals. Remember that the materials used in cooking or served with foods (flour, eggs, milk, fat, sugar, etc.) add their food value to the diet. Remember also that it is not necessary to supply all the types of food at every meal, providing enough of each is supplied in the course of the day. For example, if the foods which are depended upon for nitrogen (meat, eggs, milk, etc.) are found in abundance at breakfast and dinner, it is not necessary to include them at supper or lunch; or if a person prefers a light breakfast, he may leave out the nitrogen-rich food and perhaps some of the other foods in the morning and make up for it at the noon and evening meals. In the following lists dishes suitable for the different meals are grouped according to the kind of nutritive materials which predominates in each, and the groups are given in the order in which they are usually introduced in family meals. The dishes mentioned are examples only. Housekeepers will readily think of dishes of similar kind which they may prefer. The important thing is to know which foods belong to the different groups and then to see that all the groups are represented in the family meals.

Breakfast.

Breakfast is a much more elaborate meal in some American families than in others. Where it is hearty, all five of the food groups may be represented, though usually in dishes which do not require elaborate preparation, and with more from the bread and cereal group than from any other. When a lighter breakfast is preferred it usually consists mainly of the bread and cereal foods (group 3) with a little fat and possibly sugar (groups 5 and 4) to make it palatable, and perhaps a little fruit (group 1). Such a breakfast is made more hearty by including milk or an egg from the protein group (group 2).

FRUITS AND VEGETABLES.

(Representing group 1, depended upon to supply ash constituents and organic acids.)

Stewed prunes, dried peaches, or other dried fruits, or fresh or canned fruits when obtainable at reasonable prices. If preferred, sweet dried fruits, jam, or thick preserves (representing also group 5) may be used instead. Because of their laxative properties as well as food value, succulent fruits are eaten for breakfast, and are particularly desirable if vegetables and other fruits are not freely used at other meals.

BREAKFAST CEREALS AND BREADS.

(Representing group 3, depended upon to supply starch.)

Breakfast cereals. — Corn - meal mush, cracked-wheat mush, oatmeal mush, rice, or other cereals. Wheat raised on the farm or bought from a near-by feed store and coarsely ground in a coffee mill is a good homemade cereal. So is popcorn.

Breads. — Graham bread, whole-wheat bread, oatmeal bread, wheat-flour and rice bread, muffins, popovers, griddlecakes, etc. With bread, butter (representing group 5) would usually be served, and sometimes with griddlecakes, butter, and sirup (representing group 4) also.

EGGS, MEAT, MILK, AND SIMILAR FOODS.

(Representing group 2, depended upon to supply nitrogen.)

Eggs (scrambled, boiled, poached, etc.), egg toast, meat balls, codfish balls, hash (from left-over or corned meat), and milk.

Milk taken with breakfast cereals or used as a beverage is an important source of nitrogenous material, a glass supplying as much as 2 ounces of lean meat or one egg. Cooking cereals with milk instead of water is a convenient way of adding nitrogenous material to the meal.

SUGAR AND OTHER SWEETS.

(Representing group 4, depended upon for sugar.)

Sugar, sirup, molasses, honey, thick dried fruits, jam, and heavy preserves. Sugar, honey, molasses, or sirups are usually added to other foods in cooking or when they are eaten. Dried fruits may be cooked with cereal and so may take the place of sugar added to them. This group serves much the same purpose in the body as group 3, but is ordinarily used in smaller quantities, but is important for flavor purposes as well as nutritive material.

BUTTER AND SIMILAR FOODS.

(Representing group 5, depended upon to supply fats.)

Cream, butter, and other fats used in cookery, bacon, fat pork.

With the exception of fat meats, the fat foods are usually eaten with other foods, or used in them or in cooking them.

Luncheon or Supper.

Luncheon or supper may include dishes from all five groups, but in simpler form or smaller quantity than at dinner, though such an elaborate meal is by no means necessary. If a light luncheon is desired, group 2 (meats and similar foods) may be omitted or used in smaller amounts, or if a still lighter meal is desired, dessert (represented by group 1 or group 4) may be omitted also. When the other meals are abundant, both meat and sweets or fruit might be omitted, and bread and butter or bread or cereal and milk used alone.

EGGS, MEAT, FISH, CHEESE, AND SIMILAR FOODS.

(Representing group 2, depended upon to supply nitrogen.)

Eggs; thick dried-bean soup (soy or togo beans or cowpeas, if obtainable, are as desirable as navy or other beans more commonly used); meat-stock soup; toasted cheese and crackers; chipped beef with white sauce, i. e., thickened milk sauce; dried beans or peas baked or boiled; baked peanut or other nut loaf (ground or chopped and mixed with bread crumbs, an egg, milk, and seasoning); meat stew or pie (left-over meat or cheap cuts); or codfish balls; sliced meat (from roast of previous day); cold baked or boiled bean salad; canned or fresh fish salad (if fish may be obtained cheaply); stuffed eggs; egg, nuts, cheese (often used in made dishes or with crackers in place of sweet dessert), or meat sandwiches; or milk. Either hot or cold dishes are used for luncheon according to convenience. The above list includes both.

BREAD, ROLLS, AND SIMILAR FOODS.

(Representing group 3, depended upon to supply starch.)

White bread, or "light" bread, rye bread, toast, corn bread, rolls, buns, crackers.

Either hot or cold bread may be used as desired. Cooked cereals (see list of breakfast dishes) are suitable for use when a light luncheon or supper is desired.

BUTTER AND OTHER FATS.

(Representing group 5, depended upon to supply fat.)

Butter, cream, table oil, and other fats and oils used on the table and in cookery.

CAKES AND OTHER SWEETS.

(Representing group 4, depended upon to supply sugar and flavor.)

Sugar, jams, jellies, thick preserves, sweet dried fruits, simple cake, cookies, and "left overs" from dinner desserts.

FRUITS AND VEGETABLES.

(Representing group 1, depended upon to supply ash constituents and organic acids.)

Fruits (fresh or stewed); warmed-over potatoes; left-over vegetables; fresh vegetables used in salads, such as lettuce, celery, young onions, radishes, etc. Fruits fresh or stewed are commonly eaten at luncheon or supper as dessert. Sometimes fruit is served at the beginning instead of at the end of luncheon or supper.

Dinner.

Dinner is usually the heartiest meal of the day, and commonly a meal at which all the five groups are substantially represented. Generally speaking, the fewer times each group is represented by a principal dish, the simpler the meal. For instance, a dinner with a meat soup and a meat is not so simple as it would be if the soup were omitted. Meals seem more abundant if several representatives of group 1 (fruits and vegetables) are used instead of only one, and it is a common custom to serve one or more vegetables besides potatoes. Using a simple dessert which requires little time to prepare, such as fresh or stewed fruit or preserves with cake, or omitting dessert altogether, is a good way of simplifying dinner.

MEATS, FISH, CHEESE, AND SIMILAR FOODS.

(Representing group 2, depended upon to supply nitrogen.)

Baked, scalloped, or fried fish, meat stew, pot roast, or meat loaf with gravy (inexpensive cuts), or other meat and fish dishes; baked beans (soy beans or cowpeas, if obtainable, are as desirable as navy or other beans more commonly used); cheese with macaroni or rice; bean or peanut loaf.

POTATOES, GREEN VEGETABLES, FRUITS, AND SIMILAR FOODS.

(Representing group 1, depended upon to supply mineral matter and organic acids.)

Potatoes, sweet potatoes, turnips, carrots, parsnips, beets, onions, greens (beet tops, kale, spinach, etc.), celery, lettuce, cabbage, collards, tomatoes, green corn, snap beans, green peas, or other green or succulent vegetables grown in the garden or which may be cheaply procured; fresh, stewed, or canned fruits.

Members of group 3, such as rice, hominy, or macaroni, are often served in place of a vegetable. When this is done care must be taken to supply fruits and greens in order that mineral matter and fruit and vegetable acids may not be lacking.

BREADS, BISCUITS, AND SIMILAR FOODS.

(Representing group 3, depended upon to supply starch.)

Wheat bread or corn bread, hot or cold, rye bread, biscuits, rolls, crackers.

Potatoes and sweet potatoes are an important source of starch and similar nutrients in the diet, and in this respect resemble bread and other cereal foods. However, they are included in group 1 because of their special importance as a source of mineral and other valuable substances.

PUDDINGS, CAKES, AND SIMILAR FOODS.

(Representing group 4, depended upon to supply sugar and give flavor.)

Bread pudding, cottage pudding, simple fruit puddings, custard, or other simple made desserts, dried sweet fruits, jams, preserves.

Fresh or canned fruits representing group 1, cheese representing group 2, with crackers representing group 3, or nuts representing group 2, may be used for dessert for variety.

BUTTER, CREAM, AND SIMILAR FOODS.

(Representing group 5, depended upon to supply fats.)

Butter, cream, salad oil, and other table and cooking fats and oils.

COTTONSEED MEAL FOR POULTRY.

Cottonseed meal in rather limited amounts has been fed, since last November, with excellent results, to a pen of 30 pullets on the experiment farm of the United States Department of Agriculture. These pullets have averaged 52.3 eggs each in 20 weeks, from November 1 to March 20, which is practically equal to the best egg yield received this year from any of the other experimental rations. No bad effects have been noted from this feed, either in the eggs or in the condition of the fowls, and the hens eat it freely. The ration is as follows:

SCRATCH MIXTURE.	DRY MASH.
1 pound cracked corn.	2 pounds cottonseed meal.
1 pound wheat.	2 pounds beef scrap.
1 pound oats.	4 pounds bran.
	5 pounds middlings.
	9 pounds corn meal.

The scratch mixture is fed sparingly so that the hens eat about equal parts of this mixture and of the dry mash.

A large per cent of cottonseed meal in a dry mash without any beef scrap has not given satisfactory results. Pullets fed a ration with 33 per cent cottonseed meal averaged only 33.2 eggs apiece in one year. A considerable per cent of these eggs had discolored yolks, with green or brownish-green spots, making them unfit for market. The hens did not like this mash and had to be forced to eat it by feeding a very limited amount of scratch grains.

These results appear to indicate that cottonseed meal can be fed at the rate of about 10 per cent of the mash, or 5 per cent of the total ration, with an equal per cent of beef scrap with excellent results. In sections where cottonseed meal is produced, half of the beef scrap in the mash apparently can be replaced by cottonseed meal with excellent results.

GOOD STANDS OF CORN.

Specialists Make Suggestions for Bringing Through Proper Number of Seedling Plants.

To make every acre of corn do its full duty this year, to bring its yield up to "war strength," it must be started off with a good stand. Farmers who exercise all means to this end at planting time will be well repaid at the harvest. Here are some suggestions from specialists of the United States Department of Agriculture that may aid in securing, as far as possible, the proper number of plants to the acre:

The best distribution of plants over the land is obtained by making the distances between single plants in the row and the distances between rows the same. With such an equal distribution, the least possible loss from competition is experienced. However, in order that sufficient plants be grown upon an acre to utilize most completely the resources of the soil and climate and at the same time permit intertillage and other desirable practices, it is usually necessary to sacrifice some of the advantages to be gained by even distribution for those to be gained by other desirable cultural practices. These cultural methods frequently may be altered so as to reduce this loss, and the greatest saving in this connection is by means of implements specially adapted to this work. Where general-purpose implements are used, distances between rows of as much as 5 or 6 feet are often considered necessary. By preparing the land thoroughly and then using highly specialized machinery for planting and cultivating the corn, the rows need be no more than 3½ feet apart and the distances between plants in the rows can be increased accordingly.

The number of plants per acre required for the best results will depend more or less upon the natural fertility of the land, the quantity of fertilizer used, the method of culture practiced, the time of planting, the evenness of the distribution of plants, whether other crops are grown with the corn, the variety, and the season. The season is, of course, the most important factor influencing the stand required and, as its character can not be foretold, it is evident that specific advice in this connection can not be given.

In practice, corn is commonly planted in stands ranging from 3,630 to 7,260 plants per acre, or 6 to 12 square feet per plant. Most stands of corn have been planted with an allowance of 8 to 12 square feet per plant.

One of the most deplorable losses due to defective stand is from the blank spaces seen to a greater or less extent in practically every field. The ability of the plants to utilize extra space rapidly diminishes as the distance increases, and the practical limit probably does not exceed 5 or 6 feet. Beyond this distance the loss so far as the corn crop is concerned is complete. Good seed of a uniform size and shape is an important factor in securing a stand, as it makes possible a more uniform distribution by the planter.

Burrowing animals and birds frequently do serious damage to the stand by eating the seed or by pulling up the very young plants. Odorous substances have been tried in various ways to prevent such attacks. The substance that is most favorably considered for this purpose at present is coal tar, because it seems successful as a repellent, it will not injure the seed, costs very little, and may be dried so as to plant freely in a machine. It is recommended that the seed be wet with warm water before adding the tar. A teaspoonful of the tar will be sufficient for a peck of corn. The mass must be thoroughly mixed and then dried before planting.

In wet, cold land the seed sometimes is covered with too much soil. On such land the seed should be planted just deep enough to have it in contact with moist soil.

In cold weather or on low, flat, or otherwise poorly drained land the seed may germinate badly, and the plants that start are slow in growing and weak. Worms, grass, and weeds are likely to destroy such corn if it is not assisted. From 25 to 30 pounds of nitrate of soda per acre, applied with the corn drill at the time the corn is planted, will quickly force the young plants past the period of greatest loss and thus greatly increase the chances of securing a stand.

Whenever it is at all difficult to get the desired stand, extra seed should be planted to offset the loss. Thinning will usually result in greater economy than leaving a defective stand or replanting.

COOP THE MOTHER HEN.

Loss of Chicks by Exposure Largely Prevented by Confining the Hen.

It is not good poultry management to allow the mother hen to range unrestricted with her chicks. With such freedom the hen frequently takes her brood through wet grass, and as a result some are chilled and die, especially the weaker ones, which are likely to be left behind. The loss of young chicks which follows such a practice is large and mainly preventable, specialists in the United States Department of Agriculture say. Furthermore, the food which a brood allowed to range with the hen obtains goes very largely to keep up the heat of the body and the chicks do not make as good growth as they otherwise would.

Chick losses of this nature can be largely prevented by shutting the hen in a coop. Any style of coop which is dry, ventilated, and can be closed at night to protect the brood against cats, rats, and other animals, and which, while confining the hen, will allow the chicks to pass in and out freely after they are a few days old, will be satisfactory. The hen should be confined until the chicks are weaned, though a small yard may be attached to the coop, if desired, to allow the hen to exercise. The fence can be raised from the ground far enough to allow the chicks to go in or out, but not high enough for the hen to escape. By using a coop the chicks can find shelter and warmth under the hen at any time, and the weaklings after a few days may develop into strong, healthy chicks.

Where chicks are raised with hens, they are likely to become infested with lice. If the lice get very numerous, they greatly retard the chicks' growth and may even cause their death. The hen should be powdered thoroughly with some good insect powder before she is put in the coop with the chicks and at intervals of several days or a week thereafter. The baby chicks should be examined for lice, particularly on the head, under the wings, and about the vent. If any are found, a little grease, such as lard, should be rubbed on in those places. Apply grease moderately, as too much will injure the chicks. The chicks should be examined frequently and the treatment repeated if lice are found on them.

COMMITTEE FOR SEED SITUATION.

A committee on seed stocks has been appointed by the Secretary of Agriculture to secure full information in regard to the available supplies of seed for staple food crops and to devise methods of meeting shortages in particular regions. The committee will inventory and ascertain the amount and price of the seeds available and will consider questions relating to the growing and distribution of seed stocks. Among the crops with which the committee will work are corn, wheat, oats, barley, rye, potatoes, flax, beans, peas, soy beans, kafir corn, and sorghum.

The committee consists of the following members:

R. A. Oakley, chairman, agronomist, Forage Crop Investigations, Bureau of Plant Industry.
L. M. Estabrook, chief, Bureau of Crop Estimates.
William A. Wheeler, specialist in marketing seeds, Office of Markets and Rural Organization.
John E. W. Tracy, assistant superintendent of testing gardens, Bureau of Plant Industry.
William Stuart, horticulturist, Bureau of Plant Industry.
C. P. Hartley, physiologist in charge of corn investigations, Bureau of Plant Industry.
A. J. Pieters, agronomist, Forage Crop Investigations, Bureau of Plant Industry.
C. W. Warburton, agronomist, Cereal Investigations, Bureau of Plant Industry.

Chemical sprays are of little service in controlling wild carrot.

SOUPS THAT NOURISH.

Thick Soup, Broths, and Chowders a Meal in Themselves—An Excellent Use for "Left Overs."

Although clear soups, which are largely water, contain little nourishment, some thick soups, broths, and chowders are literally a meal in themselves, according to the dietary specialists of the United States Department of Agriculture. Even a thin soup, taken at the beginning of a meal, by its warmth and pleasant flavor may stimulate digestion, so that the heavier foods are more easily digested. The combination of soup and bread is pleasant and leads to the eating of more bread or crackers than would be consumed ordinarily. Appetizing soups also may be made often of materials which otherwise would be wasted. In this way such materials are made to contribute whatever food value they may have for the cost of the labor and fuel needed to prepare them.

One of the purposes which food serves in the body is to furnish energy for its muscular work, and one way of comparing the relative food value of different foods is to compare the amounts of energy which they furnish, or, as physiologists call it, their fuel values. A cup (i. e., one-half pint or a large soup plateful) of milk soup flavored with vegetables yields a little more energy to the body than the same amount of milk. A thick meat soup with pieces of meat and vegetables in it, a fish chowder, or a rich vegetable soup, such as cream of tomato, yields half again as much energy as the milk; while a thin soup like bouillon, consomme, or clear tomato soup, yields not quite two-thirds as much as the milk, and less than half as much as the thick soup or chowder. A generous serving of thick meat soup or fish chowder yields more energy than an ordinary portion of roast beef, and even a moderate helping of vegetable milk soup usually furnishes fully as much body fuel as a moderate sized rib chop of lamb.

There are other things to be considered besides energy in connection with the food value of different kinds of food. One is the amount of the substance called protein without which the body can not build and maintain its tissues. Meat and milk soups contribute some of the needed protein. Meat, poultry, fish, eggs, milk, cheese, dried peas, beans, and other legumes are the common foods in which protein is the most abundant, though it also appears in fair amounts in the cereal foods such as bread, breakfast foods, macaroni, rice, and the like.

The Soup Pot a Means of Economy.

Since many of the protein-rich foods are among the most expensive of those in common use, it is especially important to make the fullest possible use of what is bought. Not all of the meat which we buy is suitable for use as such. The masses of fat which are trimmed off before cooking or are left on the platters may be saved, rendered, and used in cooking, while the bones, gristle, and other refuse parts find their best use in the soup pot, where the long, slow cooking in water draws out the gelatin, fat, and other nutritive material they contain. This stock, as the resulting liquid is called, may serve as the basis not only of a great variety of soups, but also of gravies and sauces, and may be used for cooking vegetables, rice, and similar foods. When it is used for soup, its flavor may be varied by adding various vegetables, such as carrots, onions, tomatoes, turnips, and celery. It may be thickened with flour, bread crumbs, or okra. Boiled rice, barley, macaroni, and other pastes and croutons (small pieces of stale bread fried a delicate brown in deep fat) may be put in to increase the food value of soup and vary its appearance and taste.

Milk Soups and Vegetable Purées.

Soup is not necessarily made from meat stock. Vegetable soups or purées are made by boiling potatoes, beans, peas, or other vegetables until soft, mashing through a sieve and then heating with a little liquid (water, milk, soup stock, or whatever seems desirable) and flavoring. Using left-over vegetables for such purées is an economical practice. Milk soups, which are really milk thickened and flavored with some vegetable, fish, or other food to give flavor, and perhaps thickened still more with a little flour or stale bread crumbs, are both nutritious and appetizing. They furnish also an excellent means of using up skim milk. Those who wish to bring down the cost of food should remember that skim milk, a cup of which contains as much protein as a cup of whole milk, is far too valuable a food to be overlooked.

Importance of Vegetables in Soups.

In soup making it should not be forgotten that vegetables are necessary for keeping the body in health, because they are relatively rich in mineral matters and mild vegetable acids, and contain recently discovered substances without which the body processes seem not to be carried on properly. Since soups offer an excellent way of utilizing odds and ends of vegetables, and especially left overs and parts which otherwise would be wasted, the use of vegetable soup is often a real economy. The fact that soups can be given so many and so varied flavors, are so easily made, so generally relished, and make such palatable combinations with large quantities of bread and crackers, shows that they are very useful additions to the diet. Some recipes for soups, recommended by the Government specialists, follow.

Recipes for Nourishing Soups.

SCOTCH BROTH.

3 pounds mutton.
2 tablespoons pearl barley.
2 tablespoons minced onion.
2 tablespoons minced turnip.
2 tablespoons minced carrot.
2 tablespoons minced celery.
2 tablespoons salt.
1 teaspoon pepper.
1 tablespoon minced parsley.
3 quarts cold water.

Remove the bones and all the fat from the mutton, cut the meat into small pieces, and put it into a stewpan with the water, chopped vegetables, barley, and all the seasoning excepting the parsley. It will be found convenient to tie the bones in a piece of thin white cloth before adding them to the other ingredients. Bring the stew to a boil, quickly skim it, and allow it to simmer for three hours, thicken with the flour, and add the chopped parsley.

DRIED FISH CHOWDER.

½ pound salt fish.
4 cups potatoes, cut in small pieces.
2 ounces salt pork.
1 small onion, chopped.
4 cups skimmed milk.
4 ounces crackers.

Salt codfish, smoked halibut, or other dried fish may be used in this chowder. Pick over and shred the fish, holding it under lukewarm water. Let it soak while the other ingredients of the dish are being prepared. Cut the pork in small pieces and fry it with the onion until both are a delicate brown, add the potatoes, cover with water, and cook until the potatoes are soft. Add the milk and fish and reheat. Salt, if necessary. It is well to allow the crackers to soak in the milk while the potatoes are being cooked, then remove them, and finally add to the chowder just before serving.

MILK AND CHEESE SOUP.

3 cups milk, or part milk and part stock.
1½ tablespoons flour.
1 cup grated cheese.
Salt and paprika.

Thicken the milk with the flour, cooking thoroughly. This is best done in a double boiler, with frequent stirrings. When ready to serve, add the cheese and the seasoning.

The protein in this soup is equal in amount to that in five-sixths of a pound of beef of average composition; its fuel value is higher than that of a pound of beef.

MILK AND VEGETABLE SOUP.

1 quart skim milk.
1 cup bread crumbs, or
2 large slices stale bread.
1 small slice onion.
Small amount spinach or outer leaves lettuce (not more than 4 ounces).
Salt.

Cut the vegetables into small pieces and cook with the bread crumbs in the milk in a double boiler. If a large quantity is being prepared for use in a school, for example, put the vegetables through a meat chopper. In this case slices of bread can be ground with the vegetables, in order to absorb the juice.

COWPEA SOUP.

1 tablespoon butter or pork fat.
1 tablespoon finely chopped onion.
1 stalk celery, finely chopped.
1 cup dried cowpeas.
Salt.

Soak the peas 8 or 10 hours in water enough to cover. Fry the vegetables in the fat, add the peas, in the water in which they were soaked, and cook (preferably in a double boiler) until the peas are tender. Put the mixture through a sieve and add water enough to bring it to the desired consistency. Reheat. If this soup is thickened with 1 tablespoon of flour mixed with a little water, the pea pulp will be prevented from sinking. Dried navy or lima beans, peas, soy (togo) beans, or other legumes may be used instead of the cowpeas.

SPLIT-PEA SOUP.

1 pint dried peas.
4 quarts water.
1 large onion, minced fine.
4 tablespoons sweet drippings, or butter, which gives a better flavor.
3 tablespoons flour.
1 tablespoon minced celery or a few dried celery leaves.
½ teaspoon pepper.
2 teaspoons salt.

Wash the peas and soak them overnight in cold water. In the morning pour off the water and put them in the soup pot with 3 quarts of cold water. Place on the fire and when the water comes to the boiling point pour it off (throw this water away). Add 4 quarts of boiling water to the peas and place the soup pot where the contents will simmer for four hours. Add the celery the last hour of cooking. Cook the onion and drippings slowly in a stewpan for half an hour. Drain the water from the peas (save this water) and put them in the stewpan with the onions and drippings. Then add the flour and cook half an hour, stirring often. At the end of this time mash fine and gradually add the water in which the peas were boiled until the soup is like thick cream. Then rub through a sieve and return to the fire; add the salt and pepper and cook 20 minutes or more. Beans can be used in the same way as peas.

MIXED VEGETABLE SOUP.

3 quarts water.
1 quart shredded cabbage.
½ pint mixed carrot.
1 pint sliced potato.
½ pint minced turnip.
½ pint minced onion.
1 leek.
2 tomatoes.
2 tablespoons minced celery.
2 tablespoons butter or drippings.
2 tablespoons green pepper.
3 teaspoons salt.
½ teaspoon pepper.

Have the water boiling hard in a stewpan and add all the vegetables except the potatoes and tomatoes. Boil rapidly for 10 minutes, then draw back where it will boil gently for 1 hour. At the end of this time add the other ingredients and cook one hour longer. Have the cover partially off the stewpan during the entire cooking. This soup may be varied by using different kinds of vegetables.

CABBAGE AND POTATO SOUP.

½ pint boiled cabbage, finely minced.
3 medium-sized potatoes.
1½ level tablespoonfuls butter, drippings, or other fat.
1 teaspoonful salt.
¼ teaspoonful pepper.
1½ pints milk, whole or skim, or milk and water, boiling hot.

Peel the potatoes, cover with boiling water and cook until tender, usually 30 minutes; pour off the water and mash until fine and light. Add the cabbage, butter or other fat, and seasoning, then slowly add the hot milk or milk and water and boil up well. If a thinner soup is required the amount of milk or milk and water can be increased. If liked, an onion cut up fine and cooked in a little water may be added to the soup to give additional flavor, or grated cheese may be served with it. Kale, turnips, or a mixture of vegetables can be substituted for the cabbage, if desired, and this is a good way to use up leftover vegetables.

ONION SOUP.

2 large onions or 4 medium ones.
3 level tablespoonfuls fat, butter, or a mixture of the two.
3 pints boiling water, or water and skim milk (half and half).
1½ teaspoonfuls salt.
¼ level teaspoonful pepper.
2 tablespoonfuls flour for thickening, if desired.

Melt the fat and when hot put in the onions, which have been cut up fine; cook slowly until the onions are soft, then over a hotter fire until the onions are brown—but not at all burned. Add the boiling water or water and milk, thicken with the flour stirred up in a little cold water, if it is desired to give the soup a little more "body"; boil up well and serve. It is a common custom to pour the soup over pieces of browned bread before serving. A mild cheese, grated, is a good addition to the soup, particularly if it is made with water.

DESTRUCTIVE ANIMALS.

Cause Millions of Dollars Annual Loss to Farmers and Stockmen—Control Measures.

Millions of dollars' worth of produce in the field and in storage are destroyed each year by rats, mice, pocket gophers, prairie dogs, ground squirrels, and predatory animals. As an instance of the harm that has been done in this way, it may be said that if prairie dogs were stamped out in the area which they now infest, at least a million more sheep and a million more cattle could be fed on the land.

Rat-proof construction of buildings and the judicious use of poisons and traps are the most effective means of getting rid of destructive animals. The character of the poison employed, however, and the methods of distribution vary considerably, depending upon the pest to be destroyed. Detailed information in regard to rat-proof construction and the control through other means of the various pests can be obtained upon application to the Bureau of Biological Survey of the United States Department of Agriculture at Washington.

In general, it may be said that prairie dogs, ground squirrels, and jack rabbits can be destroyed successfully by the intelligent and systematic use of strychnin properly prepared and applied to oats, barley, milo maize, alfalfa hay, and other baits. Just which bait should be used depends upon the kind of animal being dealt with and on the location and season. The damage done by prairie dogs has been already mentioned. The ground squirrel, it is said, destroys annually $3,000,000 worth of grain in North Dakota alone. This must be only a small part of the total loss, because one or more forms of ground squirrel are found very generally throughout the territory west of the Mississippi River, and many of them concentrate and increase in farming areas. In the dry-farming districts and elsewhere through the Great Basin region jack rabbits, in some cases, have destroyed the entire crops and compelled the inhabitants to move out.

As for the pocket gopher, there is a case on record in which one animal has destroyed more than $100 worth of trees in a single orchard. Fruit trees and nursery stock, as well as farm produce, are eaten by this pest. Field mice, too, feed upon the bark of young fruit and shade trees, as well as on forage plants. In a Nevada valley they have been known to destroy all of the alfalfa. This meant not only the loss of that particular crop, but an expenditure of many thousands of dollars in replanting. Strychnin placed on sweet potatoes and other baits will, to a large extent, control the ravages of both pocket gophers and field mice.

Among the larger animals which do great harm are wolves, coyotes, bobcats, and mountain lions. The loss from these to stock owners is estimated at from $15,000,000 to $18,000,000 a year. The skillful use of steel traps will reduce materially the number of these animals, and, under the direction of trained men, strychnin poisoning is sometimes resorted to.

In the use of any form of poison bait, to make it effective it should be properly prepared and properly distributed, and, on the other hand, it is necessary that precautions be taken to prevent the bait from becoming a menace to either live stock or man. For this reason it is recommended that all who contemplate measures of control against noxious animals communicate with the Bureau of Biological Survey, to obtain detailed instructions appropriate to local conditions.

Seeds of the wild carrot are small but very numerous and are covered with weak bristles which catch on wool, hair, and clothing and distribute the weed for considerable distances. They frequently are harvested with grass, clover, and alfalfa seed and are widely distributed by this means. As found in clover seed, the wild carrot seeds are usually without barbs, as these are rubbed off in the clover huller.

LET NOTHING SPOIL

Heat, dirt, improper handling, flies, insects, and rats or mice are the greatest food wasters

Keep Perishable Food Cold

Keep perishables cool, clean, and covered.

The moment meat, fish, milk, and eggs are allowed to get warm they begin to spoil.

Bacteria and germs multiply rapidly in slightly warm food, and quickly make it dangerous or unfit to eat.

Keep perishable foods in the coolest, cleanest place you can provide, preferably in a good refrigerator or ice house, but, at any rate, in covered vessels suspended in the well, or in the coolest clean place in your home or cellar.

Do not keep perishable foods in a hot kitchen or pantry or in a sunny place a moment longer than is necessary.

Dry cold is a better preservative than damp cold.

Keep Food Covered and Clean

The dust particles in the air carry molds and germs.

Meat, fish, and milk are ideal breeding grounds for such germs. Keep your food covered so that these bacteria and germs will have as little chance as possible to get on your food.

House flies—better called "typhoid flies"—are among the dirtiest things that enter our homes. They fly from sewers, privies, and manure heaps, carrying filth on their feet, which they deposit on any food on which they alight. Frequently germs of typhoid fever are carried by flies in the filth on their bodies, and in their excrement (flyspecks).

Ordinary cleanliness demands that flies be kept out of our homes and away from our food.

Health protection makes it essential to banish flies. Keep all food covered, or at least screened from these carriers of deadly disease and filth. Destroy flies by every possible means.

Guard Food Against Vermin

Rats and mice destroy millions of dollars' worth of food and other property every year in homes or farms, and in business establishments. Many rats harbor the germs of bubonic plague. Trap and kill them. Look upon every mouse as an enemy to your property.

Eradicate roaches and house ants. Keep weevils out of cereals.

Keep your food where such pests can not reach it.

Keep household pets away from food.

Store Vegetables and Fruits Properly

Don't let fresh vegetables or fruits wilt or lose their flavor or begin to rot because they are handled carelessly. Keep perishable vegetables in cool, dry, well-aired, and for most vegetables, dark rather than light places.

Learn how to store potatoes, cabbages, root crops, fruits, and other foods so that they will keep properly for later use.

Don't think that any place in the cellar or pantry is good enough to store food.

Heat, dampness, poor ventilation, bruising, or breaking will rapidly make many vegetables rot, ferment, or spoil. Warmth and light make vegetables sprout and this lowers their quality.

Can or Preserve Surplus Vegetables and Fruits

When there is a surplus of fruits or vegetables that will spoil if kept, cook or stew them and keep them cold and covered for use in a day or two.

Can or preserve all surplus food from gardens for winter use. In a morning's work with ordinary home utensils, you can put up many cans of vegetables and fruit for winter use. If you have no garden, watch the markets. When any fruit or vegetable that can be canned becomes plentiful and cheap, buy a quantity and can it for home use next winter.

Be a Food Conservator

Write to-day to the U. S. Department of Agriculture or to your State agricultural college for full information as to how to keep food in the household and how to can and preserve all surplus fruits and vegetables.

DEMONSTRATE THRIFT IN YOUR HOME

MAKE SAVING, RATHER THAN SPENDING, YOUR SOCIAL STANDARD

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. VI WASHINGTON, D. C., MAY 16, 1917. No. 41

AN APPEAL TO WOMEN.

Secretary of Agriculture Points Out That in Their Own Homes They Can Aid the Nation's Armies.

The Secretary of Agriculture, in response to requests from many editors for a statement as to service women can render the Nation in the direction of producing and conserving agricultural products, has issued the following:

To the Women of the United States.

"Every woman can render important service to the Nation in its present emergency. She need not leave her home or abandon her home duties to help the armed forces. She can help to feed and clothe our armies and help to supply food to those beyond the seas by practising effective thrift in her own household.

"Every ounce of food the housewife saves from being wasted in her home—all food which she or her children produce in the garden and can or preserve—every garment which care and skillful repair make it unnecessary to replace—all lessen that household's draft on the already insufficient world supplies.

"To save food the housewife must learn to plan economical and properly balanced meals, which, while nourishing each member of the family properly, do not encourage overeating or offer excessive and wasteful variety. It is her duty to use all effective methods to protect food from spoilage by heat, dirt, mice, or insects. She must acquire the culinary ability to utilize every bit of edible food that comes into her home. She must learn to use such foods as vegetables, beans, peas, and milk products as partial substitutes for meat. She must make it her business to see that nothing nutritious is thrown away or allowed to be wasted.

"Waste in any individual household may seem to be insignificant, but if only a single ounce of edible food, on the average, is allowed to spoil or be thrown away in each of our 20,000,000 homes, over 1,300,000 pounds of material would be wasted each day. It takes the fruit of many acres and the work of many people to raise, prepare, and distribute 464,000,000 pounds of food a year. Every ounce of food thrown away, therefore, tends also to waste the labor of an army of busy citizens.

"Clothing is largely an agricultural product and represents the results of labor on the sheep ranges, in cotton fields, and in mills and factories. Whenever a useful garment is needlessly discarded material needed to keep some one warm or dry may be consumed merely to gratify a passing fancy. Women would do well to look upon clothing at this time more particularly from the utilitarian point of view.

"Leather, too, is scarce and the proper shoeing of armies calls for great supplies of this material. There are only so many pairs of shoes in each hide, and there is a shortage of animals for leather as well as for meat. Anything that can be done to encourage adults or children to take care of their shoes and make them last longer means that so much more leather is made available for other purposes.

"Employed women, especially those engaged in the manufacture of food or clothing, also directly serve their country and should put into their tasks the enthusiasm and energy the importance of their product warrants.

"While all honor is due to the women who leave their homes to nurse and care for those wounded in battle, no woman should feel that, because she does not wear a nurse's uniform, she is absolved from patriotic service. The home women of the country, if they will give their minds fully to this vital subject of food conservation and train themselves in household thrift, can make of the housewife's apron a uniform of national significance.

"Demonstrate thrift in your homes and encourage thrift among your neighbors.

"Make saving rather than spending your social standard.

"Make economy fashionable lest it become obligatory."

Wild carrot or Queen Anne's lace (*Daucus carota*) is thought to be the plant from which the cultivated garden carrot originated. The garden carrot, if allowed to grow unmolested for several years, gradually loses the highly developed crown-tuber for which it is valued as a vegetable, and becomes indistinguishable from the ordinary wild carrot.

Annual yellow sweet clover should be sown in no portion of the United States except the South and Southwest, and then only as a cover or green-manure crop.

FOOD CONTROL BILL.

Supplemental Measure to Stimulate Production, Regulate Distribution, and Prevent Exploitation.

Congressman Asbury F. Lever, chairman of the House Committee on Agriculture, today (May 3) introduced in the House a bill (H. R. 4125), supplemental to the measure (H. J. Res. 75) introduced by Mr. Lever last week, for carrying into effect the recommendations of Secretary of Agriculture Houston as to the food situation.

The new bill deals with all the necessaries of life, including foods, feeds, shoes, clothing, fuel, and articles required for their production. The measure is intended only to meet the present emergency. It is limited to the period of the war and a sufficient time thereafter for readjustment. It is based on the war clauses of the Constitution and is applicable throughout the country, irrespective of State lines.

The purposes are to stimulate production, to reduce waste, to clear the channels of distribution, to prevent hoarding, to assure fair prices, to eliminate injurious speculation, to prohibit evil practices on exchanges, and to protect the public against extortion.

The suggested legislation recognizes that the war will disturb the normal courses of trade. Accordingly, it provides machinery, first, for stimulating production and regulating distribution so as to assure a fair profit to those entitled to it; secondly, for preventing the exploitation of necessaries of life by those who aim to take advantage of the war emergency to amass unearned fortunes. With these objects in view, the bill vests wide authority in the Government to control the situation.

The mere conferring of the more extreme new powers it is hoped may be sufficient, without its becoming necessary to exercise them. There is nothing in the measure to disturb legitimate business activities. If it hereafter appears essential to exercise the new powers, provision is made for prescribing the limitations on the conduct of these activities with such certainty that those affected should experience little difficulty in meeting the requirements. On the other hand, heavy penalties are provided for those unwilling to fall in line.

The President is empowered to effect preference movements by common carriers

in order to assure an adequate and continuous supply of necessaries. He may also prescribe limitations, regulations, or prohibitions upon the use of foodstuffs in the production of alcohol and of alcoholic or non-alcoholic beverages, and may require reduction of the alcoholic content of beverages. Factories, plants, mines, or other establishments engaged in producing necessaries may be requisitioned and operated by the Government if it be essential. Just compensation for the use is provided. The Government is further authorized to purchase, produce, or otherwise to procure necessaries and to sell them at cost.

Power is granted to compel holders to disgorge and put on the market necessaries held by them in excess of amounts reasonably needed to supply their legitimate individual or business requirements for a reasonable time. The President may regulate exchanges, including their practices, quotations and the like, so as to avoid their employment as instrumentalities to effect unjust market manipulations, injurious speculation, and undue enhancement of prices.

The President is empowered to fix minimum prices, assuring fair and just returns to producers or owners, whenever, in an emergency, he finds such action essential in order to encourage greater production. In such case, the Government will guarantee producers of necessaries within the United States, who act in reliance upon the guaranty, that they will receive not less than the minimum price prescribed for their products.

The bill also contains an antidumping clause. This vests power in the President to find what rates of duty on the importation of necessaries, for which minimum prices have been prescribed, are required to prevent flooding of the American market with such excessive importations as to defeat the practical operation of the minimum price plan. When he determines these rates, by force of the statute itself they go into immediate effect.

Whenever the President shall find that an emergency exists requiring such action, he is also empowered to fix maximum prices of necessaries, if essential in order to prevent extortion. If a maximum price for any particular necessaries be established, it is made unlawful thereafter to deal in the article at a higher price.

The Secretary of Agriculture is authorized to establish and enforce standards for grades of foods, food materials, feeds, seeds, other agricultural products and fertilizers, and for the capacity of their receptacles; also to require proper labeling so as to prevent deception. In addition, he is given power to license and control the manufacture, storage, and distribution of foods, food materials, and feeds when essential to prevent uneconomical manufacture or inequitable distribution of the articles. He may prescribe the percentages of flour which shall be milled from wheat; and, when essential to increase the food supply, he is authorized to regulate the mixing of wheat, wheat flour, or other wheat products with any other cereal, cereal flour, or material of vegetable origin, in the production of food.

RADISHES AND LETTUCE.

Favorite Vegetables of the Home Gardener—Directions for Planting.

Radishes and lettuce are favorite plants in small gardens because, while these are attractive additions to the table, they are in a way luxuries on which many housewives hesitate to spend money.

Lettuce does not withstand heat well and thrives best, therefore, in the early spring or late autumn. In order to have the leaves crisp and tender it is necessary to force the growth of the plant. The usual method of growing the plant for home use is to sow the seeds broadcast in the bed and to remove the leaves as rapidly as they become large enough for use. It is better, however, to sow the seeds in rows 14 to 16 inches apart, and when the plants come up to thin them to the desired distance. With the heading type this should be about 12 inches apart. This will result in the formation of rather compact heads and the entire plant may then be cut for use. For an early crop in the North the plants should be started in a hotbed or coldframe and transplanted as soon as hard freezes are over. In many sections of the South the seeds are sown during the autumn and the plant allowed to remain in the ground over winter. Frequent shallow cultivation should be given the crop; and if crisp and tender lettuce is desired during the summer months, some form of partial shading may be necessary.

For head lettuce, Big Boston, Hanson, and California Cream Butter are good varieties. For loose-leaf lettuce, Grand Rapids or black-seeded Simpson are recommended.

Radishes are so hardy that they may be grown through the winter in cold frames in the latitude of Washington and farther south in the open ground. In the North they require hotbeds, but can be sown in the open ground as soon as the soil is moderately warm. They should be planted in drills 12 to 18 inches apart and thinned slightly as soon as the plants are up. On a quick, rich soil some of the earlier varieties can be matured in from three to four weeks after planting. If the plants are allowed to remain long in the open ground, the roots loose their crispness and delicate flavor, and in order to secure a constant supply successive plantings should be made every two weeks. One ounce of radish seed is sufficient to plant 100 feet of row. A large percentage of the seed germinates, and if the sowing is done carefully later thinning may be unnecessary. The first radishes to appear may be pulled as soon as they are of sufficient size, and this will leave enough room for those that are a little later. The plant is not suited to hot weather, but should be planted in the early spring and late autumn.

BREED YOUR SOWS NOW.

All Gilts and Sows Should Be Bred for Fall Litters—Early Pigs Better Able to Withstand Winter.

Every breedable sow should be bred to bring a fall litter. It is important that all sows be used to increase the food supply, and no sow should be carried over the summer unbred. Fall litters under common-sense management are profitable. The pigs should come in early fall—September and October—so that they may be weaned and have attained sufficient growth to shift for themselves before cold weather arrives. The earlier the pigs come in the fall the cheaper their growth will be made on available pastures and the stronger they will be to withstand the winter. The period of gestation for a sow is approximately 112 days, so that a sow bred on May 15 would farrow about September 5. This means the sows must be bred for fall litters during the months of May and June.

All sows should be bred. Scruples over breeding immature sows should be forgotten. While in normal times most hog raisers do not breed the gilts earlier than eight months of age, sows will breed as early as five to six months of age. There are thousands of young gilts farrowed last fall and winter which will take the boar and should be bred this spring. By breeding them this spring the feed given them through the summer will have been more completely devoted toward food production. It will help to produce a greater meat supply and a supply ready for market six months earlier than if they were not bred until fall. Breeding such young gilts will have no bad effects on the farm herd. Results at the Missouri Experiment Station show that the young pregnant sow continues to grow under proper feeding and that the size of the litter is not appreciably reduced. Suckling the pigs retards the growth of the young sow, but this permanent retardation of growth is small and of minor importance when the sow will produce a good litter of pigs.

Larger litters are obtained by flushing sows before breeding. This is done by feeding in such a way as to have the sows putting on weight at the time of breeding. The suckling sow should have her pigs weaned shortly before being bred. Her udder should be dried up by a reduction of feed. She should then be flushed and in a few days can usually be bred. After breeding, the sow should be watched to be sure she has caught. If she has not, 21 days later she will again show indications of heat and can again be bred.

A good pure-bred boar should be used, preferably of the same breed as the sow or

of that breed which predominates in the sow. This will result in a more uniform lot of pigs and an upgrading of the breeding herd. For the young gilts and small sows a breeding crate may be necessary if the boar be large.

The pregnant sow should be fed a ration consisting of bone-making and muscle-making feeds. She should gain weight but not be made fat. Pasture with a small grain ration proves excellent for carrying the pregnant sow until she is almost ready to farrow.

COOPERATIVE ROUTE MARKETING.

An extension of the method of collective marketing of small quantities of food supplies from a number of neighboring farms, now practiced in some sections of the country, might be a desirable step in food conservation and more economical and efficient marketing, according to specialists of the United States Department of Agriculture.

Routes for the collection of milk, cream, butter, and eggs have been established cooperatively by farmers in various parts of the country and have been found to meet the special marketing needs of small farmers more fully than other arrangements. Under this plan a single farmer, or the various members of the marketing group in rotation, drives from farm to farm to collect the small quantities of supplies, and attends to the marketing of the aggregate produce collected. In this way the multiplication of trips to town is avoided and supplies which otherwise might be wasted find their way into the market.

Although route marketing usually is practiced for the disposal of dairy products and eggs, it has been used in some regions for disposing of vegetables, fruits, dressed poultry, and other products of small bulk, and in many cases might well be employed in other sections in a similar way.

QUARANTINE NOTICE.

The Secretary of Agriculture has amended the white-pine blister rust quarantine promulgated April 21, 1917. This amendment is made effective May 1, 1917, and prohibits the movement of white pines and black currant plants from the New England States to points outside of New England. This action was necessitated by the considerable movement now under way of possibly infected white pines, and, to a less extent, black currants from New England to States lying west and south. Both of these plants are important carriers of the blister rust disease, and most of the States to which these shipments were being made have State quarantines prohibiting the entry of such stock.

ALSIKE CLOVER.

Thrives on Lowlands and in Wet Places—Hay Is Rich in Protein—Excellent Feed for Dairy Cattle.

The possibility that a continuance of the war may affect the supplies of concentrates for stock feed makes it wise at the present time to consider growing feeds rich in proteins. Of such feeds the United States Department of Agriculture wishes to call attention to alsike clover as a plant for low wet places. Analyses show that alsike clover hay is slightly richer in protein than red clover, and the hay is fine and well liked by stock. For dairy cattle especially it is an excellent feed, and a ration of alsike hay could partly replace a ration of silage and concentrates where these have been used, making a saving in concentrates. When properly cured, alsike clover hay is bright colored and sweet, making it very palatable. The plant being smooth, the hay is less dusty than red clover hay. It is *not* advised that alsike be seeded *instead* of red clover or alfalfa. Where these are successfully grown the farmer would better stick to the crops he knows will do well. Where, however, land is sour and lime can not be applied, or where land is wet and red clover and alfalfa do not do well, alsike clover can be seeded this spring with good promise of success. Where it is seeded on worn or sour upland with a grain nurse crop, there will, of course, be no cutting the same season, unless the season should be unusually wet and long, but when seeded on low, damp ground, without a nurse crop, a good cutting of hay may be expected the same season. Where the land is weedy it will be better to seed with a light seeding of oats which may be cut for hay. In this case, too, a cutting of clover hay may be expected the same season.

The department wishes especially to call attention to the wet bottoms that are often waste or weed-overgrown lands. Alsike clover thrives in such places. In many places in the South it is very successfully raised on creek bottoms. In some cases such lands are overflowed more than once in the season, and are thus risky for corn or for red clover, but alsike clover will endure an occasional spell under water and still make a hay crop when the land dries again.

In the North and West there are many swales and wet places on which the crop kills out or which are too wet to prepare for corn. Alsike should do well on such land and return a good crop of rich hay. On the Patoka River bottoms of Indiana, for example, alsike is reported as having made two tons of hay the season of sowing.

As a rule, alsike makes but one cutting, but where the land is rich and moist two cutting may be secured in the year following seeding. Of course, only one cutting can be expected the season of seeding.

It is a good plan to seed alsike clover with timothy, with orchard grass, or with redtop. When seeded alone the stems of the clover lie on the ground and make a mat that is difficult to cut. The grass serves to hold the clover up and thus makes cutting easier. The mixture is also more readily cured. A good mixture for such purpose is alsike clover 5 pounds and timothy 4 pounds per acre; or alsike clover 5 pounds and orchard grass 10 pounds. Such mixtures will give most alsike clover with enough grass to hold it up. If more grass is wanted, increase the seeding of grass.

Now is the time to attend to this matter. Farmers are urged to seed alsike clover on all lowlands and wet places. Some seedings will doubtless fail, but on the whole the result should be more good hay for cattle and a consequent saving of concentrates, resulting in a saving of cash to the individual and great food supplies for the country.

ANALYZING FARM LABOR.

Farm-management studies show that not infrequently lack of success in farming is a mere matter of faulty distribution of labor. Where such a condition exists it is of prime importance that the farmer be able to estimate the amount and the distribution of the labor involved in his farm operations, since otherwise any change in his cropping system with a view to securing better distribution of labor would be largely guesswork. A bulletin just issued by the department, entitled "Seasonal Distribution of Farm Labor in Chester County, Pa.," by George A. Billings, is designed to emphasize the importance of a well-balanced labor distribution and to give the farmer practical hints as to procedure in replanning a cropping system.

In the first part of this bulletin there is given an analysis of the labor distribution found in actual practice on 215 successful farms. The second part illustrates how the farmer may analyze the labor distribution on his own farm and apply the result with a view to reducing the labor requirements at the busy seasons and providing profitable employment for men and horses during the intervening slack seasons.

The usual advice for the control of sheep sorrel is to apply ground limestone, 2 tons per acre, hydrated lime 1½ tons per acre, or quicklime 1 ton per acre. The quicklime can be used to advantage by slaking with water and sprinkling the mixture freely over the sorrel. The liquid will injure the leaves of the sorrel as well as help correct the soil acidity.

CLOVER SEED STRIPPER.

Homemade Device for Gathering Crimson Clover Seed—Imperative Need for Saving Seed.

It is very important that every effort be made to save as much crimson clover seed as possible this year, since the supply which is annually received from Europe will be greatly reduced. The production of seed in this country will also be less than has formerly been harvested, as a large percentage of the acreage in the South winter-killed. The value of crimson clover as a soil-improving crop makes it imperative that the acreage be extended rather than reduced this fall, but in order to do this it will be necessary for the South to save as much seed as possible.

A homemade device for gathering crimson clover seed, which the Southern farmer may make and use with a small outlay of time and money, is described in Farmers' Bulletin No. 646, which may be had free of charge by applicants. This device promises a solution of the problem of annual reseeding which may make the Southern farmer independent of any foreign supply. It is especially desirable that this device be made and used this year, as it will provide a means for saving much seed which would otherwise be lost.

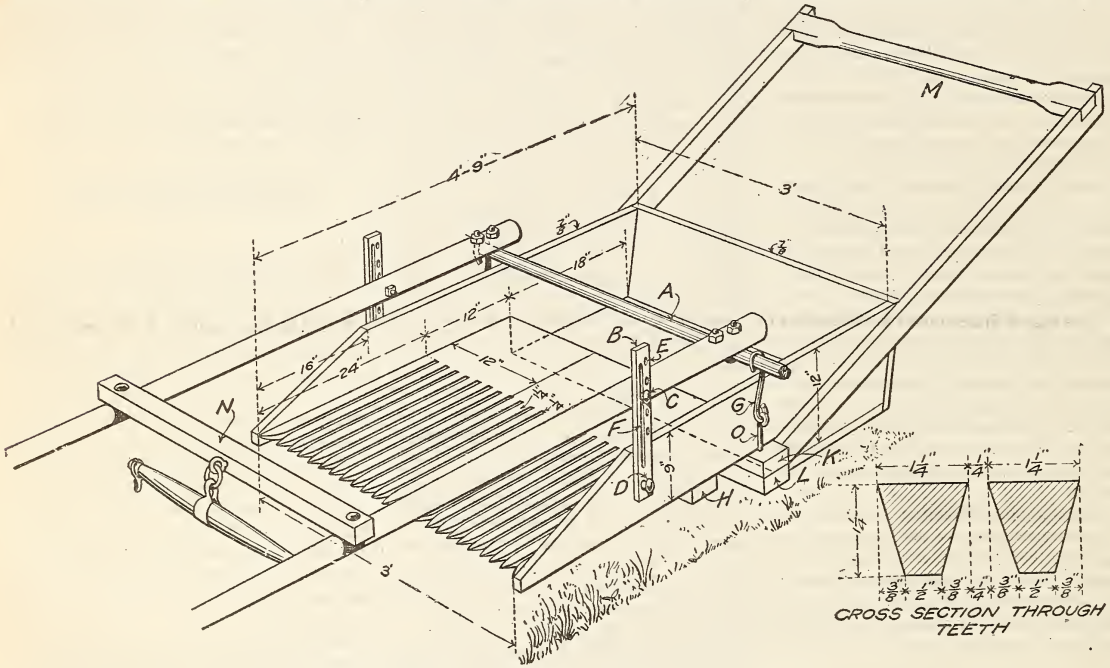
The handicaps under which crimson clover seed production in this country have labored have necessitated the importation of from three to five million pounds of seed annually. The farmer on the ordinary farm may make arrangements to save his own seed for reseeding purposes by the use of this simple device, which is made as follows:

This stripper is designed to be hung on the axle A between two wheels, which, however, are not shown in the drawing. The iron hooks G are used for attaching the stripper to the axle. The hook G should be of such length as to allow the bottom of the stripper to miss the ground by 6 inches. The handle M permits the teeth to be raised or lowered to catch the heads at the proper height. The limits through which teeth may be raised or lowered are fixed by means of the slot F. This prevents either the front or back of the machine tilting enough to strike the ground. When it is desired to hold the stripper rigid the removable bolt C can be taken out and inserted in one of the holes E. Bolt D should fit loosely in the bottom of board B to permit easy action of the attachment. It is necessary to have the plank N to which the whiffletree is attached fastened to the shafts far enough in front of the teeth to prevent the horse's hoofs from coming in contact with the teeth of the stripper. The teeth are sawed out of oak boards, which in turn are nailed to planks H and K.

The commercial production of crimson clover seed in this country is especially handicapped by frequent untimely rains which occur after the crop is cut and before the services of a huller can be obtained. A considerable acreage in a given locality is required to justify the presence of a huller in that vicinity. Where it is not desired to raise seed for commercial purposes the simple devices, some types of which can be made on the farm from readily available material at the expenditure of a few dollars, make it possible for anyone with a crimson clover field to obtain seed for reseeding purposes.

The comb stripper illustrated herewith can be of any desired size ranging from 1 foot to 10 feet in width, depending on the quantity of seed to be gathered. The hand-swung strippers are usually about 1 foot wide with the teeth 10 inches long. The particular stripper illustrated is 3½ feet wide. This is a convenient size where seed for 3 to 20 acres is desired. Where seed for less than 3 acres is to be gathered it can be stripped by one of the hand-swung strippers or even by hand, especially if cut by hand, although the operation is somewhat slow. The stripper 3½ feet wide can easily be swung on the axle of the wheels taken from an old buggy, between the hind wheels of a buggy, or even between the hind wheels of a farm wagon. This width is especially recommended when the special fields on which it is to work are in sections not connected by wide roads. This machine can be taken along any ordinary wagon road on its own wheels. If necessary, one man and a horse can operate the machine to good advantage, although a boy to assist in bagging the seed and cleaning the teeth when they become choked up is advisable. The wider stripper may be swung between hayrake wheels or set up on wheels of iron or wood. If these wheels be 18 inches or less in diameter, the stripper can be placed above the axle. It is necessary that the seed be fully ripe in order to strip easily, and it is also desirable that the ground be given level tillage in order to facilitate the operation of the stripper.

Too much emphasis can not be laid on the importance to the individual farmer throughout the Middle Atlantic and Southern States of the seeding of largely increased acreages of crimson clover or similar winter legume cover crops.



WORKING DRAWING OF CRIMSON CLOVER SEED STRIPPER.

GRASSHOPPER CONTROL.

Spring and Fall Protective Measures—Use of Poisoned Baits Most Effective Control Method.

Grasshoppers begin to feed upon the farmer's crops immediately upon hatching from the egg. Unlike many insects, there is no grublike larval stage, nor is there any resting or true pupal stage. They are active and able to hop about almost immediately upon emergence from the eggs. They are, however, unable to fly while young, as it takes from 70 to 90 days for them to develop wings. The farmer should, therefore, attack the pest during its young stages, since not only less material and labor are required, but they can not fly to untreated fields as they often do when mature, according to a Farmer's Bulletin of the United States Department of Agriculture, No. 747, entitled "Grasshopper Control," by W. R. Walton.

There are three principal methods of control discussed in the bulletin as being of more or less practical value in combating grasshoppers; Destruction of the eggs, trapping the insects in the field, and use of the poisoned baits.

The eggs of grasshoppers are deposited in the ground or in the crowns of plants such as alfalfa in the drier regions. Where cultivating implements can be used, the ground containing eggs should be thoroughly plowed or disked and harrowed in the fall, as these operations prevent the eggs from hatching the following spring. Digging up the soil by hand is practicable only in gardens, truck farms, or ground under intensive cultivation.

The most common method of trapping is by the use of a simple horse-propelled implement called a hopperdozer. This consists of a long shallow pan or trough, with a back and side wings rising at right angles to the pan and is mounted on runners. The pan is constructed of galvanized sheet iron, the back and side wings may be built of wooden frames covered with stout muslin or light cotton duck. and the runners are made of wood or old wagon tires. The pan is kept partly filled with water covered with a film of low-grade kerosene. As the hopperdozer is drawn over the field, the grasshoppers jump or fly against the back and most of them are precipitated into the oil-covered water in the pan. A slight touch of oil is fatal to the insects. These implements can not be used on uneven, stony, or recently cleared land, nor in meadows or fields of grain where the crops have reached a considerable height. Even where they are used successfully, a good many grasshoppers escape being killed.

The most effective method of control, according to the bulletin, is the use of poisoned baits. Poisoned-bran bait has proved to be a simple, reliable, and cheap method of destroying grasshoppers. This bait is prepared as follows: Wheat bran, 25 pounds; Paris green, 1 pound, or white arsenic, 1 pound; 6 finely chopped lemons or oranges; low-grade molasses, such as refuse from sugar factories, or cattle molasses, known as "black strap," 2 quarts; water, 3 to 4 gallons. The bran and Paris green or other arsenical are mixed thoroughly while dry, then the fruits are chopped finely and added, and lastly the diluted molasses is poured over the bait and the whole thoroughly kneaded. A coarse-flaked bran is most desirable, although where this can not be obtained easily ordinary middlings or alfalfa meal may be substituted; a low-grade, strong-smelling sirup or molasses, however, is essential to the entire success of the undertaking. Crushed ripe tomatoes, watermelons, or limes may be substituted for the lemons or oranges, if necessary. Ordinary powdered white arsenic (arsenious acid) contains nearly twice as much arsenic as Paris green and is comparatively low in price. The powdered form of arsenate of lead may be used, but in this case twice as much of it must be used as of the Paris green. In semiarid regions water should be added to the bait at the rate of 4 gallons to 25 pounds of bran, as in these climates the bait dries out very rapidly and the extra moisture is necessary in order to attract the grasshoppers.

Another effective bait is the modified Criddle mixture. This is prepared as follows: Fresh horse droppings, ½ barrel; Paris green, 1 pound, or powdered white arsenic, 1 pound; finely chopped oranges or lemons, 6 to 8 fruits; water sufficient to make a moist but not sloppy mash. This bait must be thoroughly mixed before being distributed, and as most people object to handling this mixture with the bare hands a pair of cheap rubber gloves may be used for the purpose.

Both the poisoned-bran bait and the modified Criddle mixture are distributed over the infested fields by sowing broadcast, either on foot or from a light wagon or buggy. A broadcast grain seeder, mounted on a wagon, has been used successfully for this purpose in the western portions of the country.

In applying the poisoned baits in orchards care must be taken to avoid distributing it close to the trees, because severe injury to fruit trees occasionally results from such applications of arsenical poisons.

The time of day chosen for distributing the poisoned baits has an important bearing upon the results secured. In California and other semiarid regions the bait should be distributed in late afternoon or early evening, just before the grasshoppers ascend the plants on which they usually pass the night. They are apparently hungry and thirsty at this time and greedily take the bait if it be available. In the moister portions of the country, such as New England and Florida, the bait should be applied early in the morning to secure the best results. Farmers should not be discouraged if the grasshoppers do not drop dead immediately upon eating the poison, as it usually takes 24 hours or more for the full effect of the baits to become apparent.

FUR FROM DOMESTIC RABBITS.

The war has interfered with importations of rabbit or cony fur from Europe and Australia to such an extent that both hatters' fur and cony have risen materially in price. Nevertheless, furriers seem to have made little attempt to find or utilize a home supply. Many, it is said, think that cony is exclusively a foreign product and that American-grown rabbits have inferior pelts of little value. As a matter of fact, American breeders are raising the same kinds of rabbits that produce the best cony of the fur shops. The climate here is as favorable for the production of good fur as in Europe, and if American rabbit skins are of poor quality the true cause is bad management and not climate or breed.

It is certain that as valuable rabbit fur can be produced in America as elsewhere. Probably the quality of the pelts can be greatly improved by selective breeding. The important thing is to induce the fur trade to recognize the importance of the domestic supply and to establish a market for the skins with well-understood standards of preparing and handling. A cooperative plan for exhibiting good dressed skins to the trade should, it is said, aid breeders to accomplish their object.

Poison ivy will not be killed by a single cutting, as new shoots or suckers are persistently sent up from the rootstocks. The rootstocks must be exhausted by destroying the foliage as fast as it appears, either by repeated mowing or by spraying with a strong salt brine made at the rate of 3 pounds of common salt per gallon of water. If the weed is cut or sprayed in June and the treatment repeated abour three times at intervals of 10 days or two weeks, the rootstocks will become exhausted and die. Arsenite of soda (a violent poison), ¼ pound per gallon of water, or crude oil may be substituted for the salt spray. Spraying does not affect the roots directly, but is simply equivalent to cutting. However, there is the advantage that one need not come into actual contact with the plant.

Stale bread can be utilized in a variety of ways in combination with vegetables and meats, in preparing cakes, breads, and puddings, and in other ways.

BULL ASSOCIATIONS.

Produce Better Bred Cows at Less Cost to the Dairyman—Contagious Diseases Controlled.

Seventy-six dollars represents the dairyman's investment in bulls. Two-thirds of this money can readily be saved and better bulls obtained by joining a bull association, according to the specialists of the United States Department of Agriculture. Through this cooperative organization dairymen can save money, make their enterprise more efficient, and obtain better bred cows, capable of producing more milk. In this way community breeding is established, constructive breeding is encouraged, bulls are used to their full capacity, good bulls are kept and used as long as fit for service, and contagious disease is successfully controlled.

The typical cooperative bull association, composed of from 10 to 50 farmers, jointly owns 5 bulls, divides its territory into 5 blocks, and assigns a bull to each block. From 30 to 80 cows are owned by the farmers in each block and the bull is kept on some farm conveniently situated. Thus a cooperative bull association is an organization of farmers for the joint ownership, use, and exchange of high-class, pure-bred bulls. In addition, it stimulates the careful selection of cows and calves, introduces better methods of feeding, helps its members market dairy stock, and in other ways assists in lifting the dairy business to a higher level.

A bull association reduces the number of bulls to the minimum, because one bull serves several small herds. This means that for the same or less money much better bulls can be owned, and as the number is smaller the cost of "keep" is consequently reduced. The original investment per member in bulls under this plan ranges from $20 to $90, covering a period of 10 years. Good, pure-bred bulls, therefore, are brought within the reach of any farmer, no matter how small his herd. In fact, it is less expensive than to own a scrub bull.

While few farmers can afford a $1,000 bull, every farmer can own a share in one. Such a bull, wisely used, will pay for himself several times over in the first generation of his offspring. In fact, the first 7 daughters of one association bull showed an average butterfat production of 62 pounds more than their dams, and the first 2 daughters of another bull in the same association showed an average butter fat production of 116 pounds more than their dams. At the price of 30 cents a pound for butterfat, the 7 daughters of bull No. 1 will earn in 4 year's time $500 more than their dams. It is only when the lifetime-production records of all his daughters are computed and compared with those of their dams that the full value of a pure-bred bull's services to one generation can be known. In addition, his influence on the herd will be noticeable for many generations. This illustrates the great value of a good bull. The damage done by an inferior bull may be equally great. No other argument should be necessary to convince every owner of dairy cows that he ought to join a bull association.

Cattle breeding is especially adapted to cooperative effort, and its greatest development will come through community breeding. A bull association encourages the keeping of only one breed of cattle on the farms of its members, and the establishment of that breed in the community. Breeders will realize that buyers visit districts where large numbers of the type of cattle they seek can be found.

Constructive breeding is often difficult for the small breeder because of the great expense involved. In this respect the breeder of pure-bred live stock suffers most. The bull association offers an excellent opportunity for the skillful mating of superior animals and for intelligent, long-continued line breeding.

When the association is composed of five or six breeding blocks, all its good bulls are used to their full capacity and kept as long as fit for service. Advancing the bull to the next block at the end of two years does not eliminate him, but makes it possible to avoid inbreeding.

Contagious diseases are much feared by cattle owners, for the losses which they entail are enormous. The properly managed bull association furnishes its members with a means for controlling tuberculosis and contagious abortion in their herds. Such an association requires the cattle of each member to be tested for tuberculosis and takes every known precaution to prevent the introduction of contagious abortion.

NO FREE COPIES OF BIRD BULLETIN.

The Department of Agriculture announces that no copies of Farmers' Bulletin No. 513, "Fifty Common Birds of Farm and Orchard," are available for free distribution. Copies can be obtained only by purchase from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the price set by him, 15 cents per copy—postage stamps not accepted.

Much food is thrown away because so many people do not know how to utilize left-overs or will not take the trouble to keep and prepare them. Left-over cereals can be reheated or combined with fruits, meats, or vegetables into appetizing side dishes. Even a spoonful of cereal is worth saving to thicken soup, gravy, or sauce.

WILD ONION PEST.

Means by Which Dairymen and Wheat Growers May Avoid Loss from This Common Weed.

The wild onion is a common pest which may cause serious loss both to dairymen and to wheat growers. If the weed gains a footing in grain fields, the bulblets produced on the top of the onion stems are difficult to separate from the wheat grains. When harvested with the wheat they contaminate the flour and gum the mill rollers to such an extent that the price of onion-infested wheat is from 20 to 50 per cent less than that of onion-free grain. In the case of the dairyman the loss is due to the disagreeable flavor in milk from cows which have recently eaten the weed.

This trouble is most in evidence in the spring of the year, especially in the Middle Atlantic States. Frequently the onion flavor is so pronounced that milk dealers refuse to accept the milk, and, if the dairyman is selling direct to the consumer, many of his customers are likely to object so strongly to the milk that there is a considerable loss of trade. The most practical means of avoiding this, say specialists in the United States Department of Agriculture, is to drive the cows from onion-infested pastures several hours before milking time. Experiments conducted on one of the Government farms indicate that if a period of about 4 hours elapses between the eating of the wild onions and milking time the onion flavor is so faint that it is practically imperceptible. The time required, however, for the unpleasant odor and taste to disappear depends upon the amount of onion that the cow has eaten. If more than a pound of the onion tops is consumed by any of the cows, 4 hours may not be long enough to rid the milk of the objectionable condition.

For this reason the dairyamn should endeavor to eradicate the pest permanently. This, however, requires time unless the onions are so few that the individual plants may be destroyed with a mattock. In the majority of cases eradication involves plowing the land late in the fall and seeding it the following spring to some cultivated crop, cotton and corn being perhaps the best suited for the purpose. The cultivation of the crop keeps down the onion growth for that year and when thoroughly carried out results in the final destruction of the plants.

This long process of eradication is due to the fact that in the case of the wild onion there is an overlapping of generations. In midsummer, when the plants mature, each has at its base a large soft-shelled bulb and several smaller hard-shelled ones. The soft-shelled bulbs germinate in the fall and by

the following spring the new plant has begun to form new bulblets. On the other hand, the hard-shelled bulbs remain dormant until the following spring. Plowing in the fall buries the plants that have come up from the soft-shelled bulblets before they have begun to produce other young bulbs, The dormant hard-shelled bulbs, however, are not destroyed by the plowing and, if left alone, will produce new plants in the spring. The growth of the plants can best be kept under by the cultivation of some crop on the land. The cultivations should be made with a view of keeping down top growth of the onion at all times. An ordinary cultivator, to which sweeps or weed knives are attached, is well suited for the purpose, since it cuts the onion stems off below the surface. The sweeps vary in length from 6 to 18 inches and may be fitted to any of the modern cultivators in place of the shovel. In the majority of cases thorough cultivation of this kind will kill off all the weeds. If they appear again in the fall, however, the process outlined must be repeated.

Detailed information in regard to the eradication of the wild onion or garlic from fields or pastures may be found in Farmers' Bulletins 608 and 610, which can be obtained free by writing to the Department of Agriculture, Washington, D. C. The department has also worked out a method of separating, on a commercial scale, the onion bulblets from wheat, which will be of interest to millmen.

COOPERATIVE SELLING.

Found to Be Profitable by a Number of Women's Social and Educational Organizations.

Cooperative selling has been undertaken and found profitable by a number of women's organizations which were originally formed for social and educational activities, according to information obtained in connection with the rural organization investigations of the United States Department of Agriculture. In some cases, especially in localities frequented by the summer boarder or the automobile tourist, sales are made direct to customers who come to the salesrooms of the organizations or to their special sales; in other cases sales are made through the parcel post and by other means.

One organization whose primary purpose is to raise funds for community development has established a salesroom where members can sell garden and dairy products, jellies, and cookery for individual profit. This salesroom is located on the direct automobile road to a large city, and in order to attract tourists and automobile parties a tea room is operated in connection with the salesroom. Special sales are held in connection with such social features as Japanese teas, to stimulate the interest of members of the organization, to induce them to bring in articles for sale, and to advertise the salesroom.

Another organization, which had its origin in a country pageant, has sold embroideries, jellies, and canned goods for its members. Every woman is required to furnish two or more articles for sale each year. These articles are kept on sale at the home of one of the members, and special sales are held at various fairs and group meetings. The goods are attractively displayed on these occasions, and bread, cakes, candies, cheese, and other farm products are added to the list of articles offered for sale. Approved recipes have been adopted for cakes and candies, in order to insure a uniform product, and a card bearing the trade-mark of the club is attached to every article sold.

Eggs and butter are being marketed by parcel post by the members of a church society in one of the Southern States. One member of the club purchases cartons for all, and keeps lists of customers. Each woman makes her own sales direct to the customer, usually by correspondence, and places upon the official list the names of persons asking for products which she can not supply. It was found necessary to produce a uniform quality of butter, and to put it up in square prints, rather than in rolls, in order to furnish customers with a standardized product.

Other organizations are finding a market for special products of the arts and crafts, such as rag rugs of a given pattern, dyed with vegetable dyes, basket work, and handmade laces. They have adopted trademarks and are selling the goods through salesrooms established by the club at fairs and through special sales.

The membership of the organizations which are engaged in cooperative selling for their members ranges from a small group of neighbors to over 100 women. Where various products are sold, the embroidery department generally has the greatest number of articles for sale, though there is a better market for cookery and farm products, which afford better returns to the women who offer them for sale.

An annual membership fee of from 50 cents to $1 generally is required for these organizations, and a charge of from 10 to 15 per cent of the selling price usually is made to cover the costs of selling. In a few instances the managing board has been able to secure an efficient person to take charge of the enterprise for a specified percentage on the sales.

Every bit of fat trimmed from meat before cooking or tried out in boiling, roasting, or broiling can be made use of in cooking. Many butchers, after they have weighed meat and named the price for the cut, trim off valuable fat. This fat, which the housewife pays for, if taken home and used would reduce expenditures for cooking fats.

EXTEND HOG RAISING.

Advantages Possessed by Sections Outside of Corn Belt Where the Industry Might Be Extended.

The imperative need for an abundant food supply this year demands an increase in pork production. All the agricultural authorities unite in declaring that the livestock holdings of farmers already are too low and that they must not be reduced further in order to obtain greater yields of staple crops. Fortunately this is not necessary. Hog raising can be extended in many sections of the country where it is now of little importance, and the total supply of human food increased accordingly.

At the present time a large part of our pork comes from the few States in the corn belt, where it is the common belief that hog raisers possess advantages that farmers in other sections lack. This, however, is not altogether true. The South, the East, and the extreme West possess advantages of their own, and there is no reason why the industry should not be developed extensively in those regions.

The South has an abundance of vegetation. Cowpeas, soy beans, velvet beans, and peanuts are leguminous crops which do well there and have great value in pig raising. Corn grows rapidly in all parts of the South, and in the subtropical sections the experience of feeders with cassava indicates that it has considerable value for pork production. In addition, there is generally an abundant water supply, the climate is mild, and there is a long period in which green feed is available. These conditions, which also lessen the expense of shelter and winter feeding, permit a long period of pasture and outdoor life.

In the East the trucking and dairying industries can advantageously be accompanied by pig raising. The truck farms waste each year a vast amount of unmarketable products that might be used with profit in feeding hogs. On the dairy farms such byproducts as skim milk and buttermilk are especially relished by growing pigs and can be profitably utilized by them. Furthermore, clover, bluegrass, and other forage crops well adapted for raising swine grow rapidly in nearly every section of the East. Corn, too, is successful, in some sections the average yield per acre being greater than that of the Middle West.

In the extreme West the alfalfa of the irrigated valleys and the clover of the coast districts furnish a good foundation for successful pork production. In most of these regions there is an abundance of small grain, particularly barley, that may often be fed economically, and corn is successful in some localities.

Hitherto, where corn has been cheap and abundant, it has been used so extensively for feeding to hogs that there is a widespread notion that it is the best feed. Investigations, however, have shown that it has its disadvantages as well as its advantages. When it is the exclusive grain feed, breeding stock are not as prolific as on a varied ration, and for fattening purposes an exclusive corn diet is not generally profitable. The hog is naturally a heavy and promiscuous eater. He thrives best where pastures are plentiful and grain crops, nuts, or roots are most abundant. He must have water at all times, and shelter in winter. If these conditions are met, hog raising can be made profitable outside of the corn belt as well as in it.

NEW SORGHUMS RISKY.

Farmers Warned Not to Discard Standard Varieties for Novelties Without Previous Testing.

Farmers on the Great Plains who are interested in new varieties of sorghum are being advised by the specialists of the United States Department of Agriculture to test out the novelty on a small experimental acreage before they discard a standard variety. Cross-pollination takes place readily between different varieties, and as a result new strains are constantly being found. Some of these doubtless are promising, but the average farmer can scarcely afford to conduct extensive experiments at his own risk. The State experiment stations and the United States Department of Agriculture are conducting this work on a large scale, and individuals who are tempted to plant new sorghums heavily should communicate with the specialists before investing largely in sorghum novelties at high prices.

Recently a number of inquiries have been feceived by the department in Washington in regard to Schrock kafir which was discovered at Enid, Okla., in 1912. This plant is believed to be a hybrid between some kafir and a sweet sorghum. It was at one time believed that it might be found valuable for both grain and fodder, but tests show that the tannin in the seed lessens its value as a grain crop. As a silage sorghum, ruture tests may show that the Schrock kafir has considerable merit, but this quality alone will not warrant its general adoption.

It has also been asserted that Schrock kafir is remarkably early and has great drought resistance. As a matter of fact, however, it requires from 100 to 120 days to mature fully, and this alone will prevent the successful production of the variety north of southern Kansas. Furthermore, the time required to reach full maturity means that it will suffer more from drought than earlier varieties. Tests of the comparative yields of a number of varieties of sorghum carried on by the United States Department of Agriculture at Hays, Kans., and at Chillicothe and Amarillo, Tex., do not furnish any very strong argument for the general adoption of Schrock kafir. As has been said, its long growing season prevents it from being a success under the conditions that prevail at and north of Hays, Kans. Farther south, in Oklahoma and Texas, it has made good yields, and in 1915 it was the highest yielding sorghum at Woodward, Okla. The presence of the tannin in the seed, however, lowers the feeding value to an extent that is not offset by the yields even in those places where the variety does well.

A MEAT SUBSTITUTE.

Cottage Cheese Contains Larger Percentage of Body-Building Material Than Most Meats.

Cottage cheese is one of the important meat substitutes, say specialists of the United States Department of Agriculture. It contains a larger percentage of protein (the chief material for body building) than most meats and furnishes this material at a lower cost. In every pound of cottage cheese there is about one-fifth of a pound of protein, nearly all of which is digestible. Meats, on the other hand, usually contain less protein and besides have a certain waste, such as bone and other inedible material. A pound of cottage cheese daily would supply all the protein required by the ordinary adult engaged in a sedentary occupation.

The following table shows that cottage cheese is much cheaper than most meats in furnishing protein for the diet.

For supplying protein, one pound of cottage cheese equals—

1.27 pounds sirloin steak.	1.44 pounds smoked ham.
1.09 pounds round steak.	1.58 pounds loin pork chop.
1.37 pounds chuck rib beef.	1.31 pounds hind leg of lamb.
1.52 pounds fowl.	1.37 pounds breast of veal.
1.46 pounds fresh ham.	

In addition to protein, energy for performing body work must be furnished by food. As a source of energy also cottage cheese is cheaper than most meats at present prices. The following table shows the comparison when energy is considered.

On the basis of energy supplied, one pound of cottage cheese equals—

8½ ounces sirloin steak.	5 ounces smoked ham.
11½ ounces round steak.	6 ounces loin pork chop.
11¼ ounces chuck rib beef.	7⅓ ounces hind leg of lamb.
10¾ ounces fowl.	12¾ ounces breast of veal.
5½ ounces fresh ham.	

TUBERCULOSIS IN HOGS.

Healthiest Appearing Animals Often Are Rejected at the Slaughterhouse—Disease Is Preventable.

Tuberculosis may be lurking in your pig pens. Look out for it. Hogs appearing thrifty and well may show infection at the slaughterhouse. One in four may be rejected. That was the proportionate loss of one farmer not long ago who thought his herd was healthy. Some of the finest appearing animals, when slaughtered, proved to be infected and brought only tankage and grease prices. The loss in this instance, multiplied by thousands of such cases, will give the millions in damage done every year by this plague, which is preventable.

Tuberculosis in hogs is insidious; hard to detect. The slaughterhouse report may be the first indication that your swine are diseased. A tuberculin test, however, will tell if it is in your herd. Farmers' Bulletin 781, "Tuberculosis in Hogs," explains this test and describes symptoms that may be recognized when the animals have reached the advanced stages of the disease.

Once discovered, tuberculosis should be fought vigorously. Get rid of all infected animals. To do that it may be necessary to sell the entire herd, including the breeding animals, for what the healthy hogs will bring as meat and the infected hogs as tankage or grease. But small sacrifices now will prevent much larger ones later.

Before starting with a new herd, which first should be tested for the disease, make the place sanitary. Tuberculous cattle are the chief source of tuberculosis in hogs. Unpasteurized skimmed milk and the droppings of cattle convey the disease germs. That means milk should be freed of the germs by pasteurization, or heating, before feeding to hogs. It means also that swine should not be allowed to run with cows unless the cows have passed the tuberculin test. Dispose of cattle showing a reaction from the disease. In the case of steers or other cattle known as "feeders" it is comparatively safe to allow hogs to follow them, as the disease is not very common among these animals, and they usually are sold off the farm before the disease, if contracted, develops to a point where their droppings will be infected.

All raw garbage, raw slaughterhouse offal, and carcasses should be thoroughly cooked before they are fed to hogs. Prepared tankage from slaughterhouses is a safe feed, as its preparation involves thorough cooking or sterilization.

Scald all skimmed milk, buttermilk, or whey. Even boiling will not lessen their feeding value. Either scalding, boiling, or

pasteurizing—that is, heating to 145° F. and holding at that temperature for 30 minutes—will kill all germs of tuberculosis and also render harmless stray germs of many other animal diseases. No farmer, unless his herd is tuberculin-tested and free from the disease, should feed his skimmed milk raw to his swine. If the skimmed milk comes from a creamery, insist that it be pasteurized there. Get your neighbors to join in such a demand. The milk from one tuberculous herd is liable to contaminate all the skimmed milk in that creamery.

With tuberculosis eradicated from your farm, be cautious to prevent its return. Do not bring in new stock until you are satisfied it is free from the disease. Make it your practice to see the slaughterhouse report of hogs that are marketed. Be on the alert to catch a possible outbreak at its beginning. Such methods are bound to result in a thriving, healthy herd that will attract buyers, who are now beginning to avoid districts where tuberculosis is common.

VIOLATIONS OF LAWS.

Fines and penalties were imposed in prosecutions for violations of regulatory laws as reported to the Bureau of Animal Industry during the month of March, 1917, as follows:

Meat-Inspection Law.

John E. Weaver's Sons, Lancaster, Pa., $100.
Samuel J. Levine, New York, N. Y., $50.

Twenty-eight Hour Law.

Atchison, Topeka & Santa Fe Railroad Co., $100 and $15.95 costs.

New York Central and Hudson River Railroad Co. (15 cases), $1,700 and $253.70 costs.

Pere Marquette Railroad Co., $200 and costs.

Grand Trunk Railway Co., $200 and costs.

Milwaukee, St. Paul & Sault Ste. Marie Railway Co., $100 and costs.

Michigan Central Railroad Co., $185 and costs.

Chicago, Milwaukee & St. Paul Railway Co. (2 cases), $300 and costs.

Louisville & Nashville Railroad Co. (2 cases), $200 and costs.

Delaware & Hudson Co., $100 and costs.

Baltimore & Ohio Railroad Co., $100 and $17.05 costs.

Chicago & Alton Railroad Co., $100 and costs.

American Express Co., $100 and $14.90 costs.

Delaware, Lackawanna & Western Railway Co., $100 and $28.25 costs.

Kansas City Southern Railway Co., $200 and $14.70 costs.

Quarantine Laws.

Chicago, Rock Island & Pacific Railroad Co., interstate shipment in violation of regulations regarding shipment of dead animals, $100 and $19 costs.

St. Louis & San Francisco Railroad Co., interstate shipments in violation of regulations regarding shipment of dead animals, $100 and $23 costs.

Miscellaneous.

Peter Oosternyk, for interference with performance of official duties of bureau inspector, $1.

In the more humid sections of the country good stands of sweet clover usually are obtained by seeding with a nurse crop.

HOW TO SELECT FOODS.

Grouping of Foods to Effect Economy and Insure Proper Diet—Those in a Group Are Interchangeable.

If the housewife will group the various foods in her pantry, vegetable bins, and refrigerator, into five simple groups and will see that foods from each of the groups appear in each day's meals, she can feel sure that she is giving her family the eight different substances which the body needs for well-being. This grouping will help the housekeeper who wishes to save money or time to simplify her meals without making them one-sided or incomplete. It will enable her to determine whether the meals supply all the different materials needed and will prevent substituting one food for another which has an entirely different use.

To help the housewife group foods in a simple and effective way, the nutrition specialists of the United States Department of Agriculture have published the following suggestive grouping in Farmers' Bulletin 808, on how to select foods.

Group 1.—Fruits and Vegetables.

Without these the food would be lacking in mineral substances needed for building the body and keeping it in good working condition; in acids which give flavor, prevent constipation, and serve other useful purposes; and in minute quantities of other substances needed for health. By giving bulk to the diet they make it more satisfying to the appetite.

Foods depended on for mineral matters, vegetable acids, and body-regulating substances.

FRUITS.	VEGETABLES.
Apples, pears, etc.	Salads—lettuce, celery, etc.
Berries.	Green peas, beans, etc.
Oranges, lemons, etc.	Tomatoes, squash, etc.
Bananas.	Potherbs, or "greens."
Melons, etc.	Potatoes and root vegetables.

Group 2.—Meat and Meat Substitutes.

These are sources of an important body-building material, protein. In the case of children part of the protein food should always be whole milk.

Foods depended on for protein.

Milk, skim milk, cheese, etc.	Fish.
Poultry.	Dried peas, beans, cowpeas, etc.
Eggs.	Nuts.
Meat.	

Group 3.—Foods Rich in Starch.

Cereals (wheat, rice, rye, barley, oats, and corn) and potatoes (white and sweet). Cereals come near to being complete foods, and in most diets they supply more of the nourishment than any other kind of food. It is not safe, however, to live only on cereals.

Foods depended on for starch.

Cereal grains, meals, flours, etc.	Crackers.
Cereal breakfast foods.	Cakes, cookies, starchy puddings, etc.
Bread.	Potatoes and other starchy vegetables.
Macaroni and other pastes.	

Group 4.—Sugar.

Unless some of the fuel is in this form the diet is likely to be lacking in flavor.

Foods depended on for sugar.

Sugar.	Candies.
Molasses.	Sweet cakes and desserts.
Sirups.	Fruits preserved in sugar, jellies, and dried fruits.
Honey.	

Group 5.—Foods Very Rich in Fat.

These are important sources of body fuel. Without a little of them, the food would not be rich enough to taste good.

Foods depended on for fat.

Butter and cream.	Salt pork and bacon.
Lard, suet, and other cooking fats.	Table and salad oils.

Some food materials really belong in more than one group. Cereals, for example, supply protein as well as starch; potatoes supply starch as well as the mineral matters, acids, cellulose, and body-regulating substances, for which they are especially valuable; and most meat supplies fat as well as protein. The lists given above show some of the common food materials arranged in these five groups, according to their most important nutrients. Thinking of foods as belonging to these groups should help to prevent two mistakes—that of serving meals that have not sufficient variety and that of cutting down in the wrong places when economy either of time or money is needed.

The groupings will help the housekeeper who wishes to save money or time to simplify her meals without making them one-sided or incomplete. For example, from these groups, the housewife who has been serving bread, potatoes, and rice or hominy in one meal, will see that one or even two may be left out without omitting any important nutrient. They will show her that a custard which is made of milk and eggs, two foods from group 2, would hardly be needed after a meal in which a liberal supply of meat had been served, and that a child does not need milk at the same meal with an egg or meat. It will suggest that baked beans or other legumes or thick soups made of legumes, are substitutes for meat rather than foods to be eaten with meat.

If, by studying these groups, the housewife finds that she has provided tissue-building protein (group 2), and the necessary though small amount of tissue-building

(*Continued on column 3, page 10.*)

COWPEAS AS FOOD.

Comparable with Meat in Nutritive Value—May Well Be Used More Extensively as Human Food.

Cowpeas, or southern field peas, which, despite their name, are really a kind of bean, are, like other dry beans, comparable with meat in the kind of nourishment contained in them, and can, in the opinion of specialists of the United States Department of Agriculture, well be used more extensively as human food. They are commonly used in the South, where they are extensively grown, but are practically unknown in the North and Northwest, where other, often more expensive, beans are consumed in large quantities.

There are many varieties of cowpeas, of which the white and black eye sorts are considered particularly desirable for the table. In palatability, digestibility, and nutritive value they compare favorably with other beans, while their delicate and pleasing flavor lead many to consider them equal, if not superior, to the latter.

Cowpeas are used on the table in three forms—in the pod, shelled green, and shelled dry, corresponding, respectively, to string beans, shelled green beans, and dried beans, and calling for much the same methods of preparation for the table. The dry cowpeas are by far the most common. Like dry navy or lima beans, cowpeas may be boiled with a bit of fat meat or baked and served in place of lean meat or other food rich in nitrogen. Boiled and mashed through a colander, the beans form a foundation for numerous dishes. They may be creamed with milk and butter, like mashed potatoes; formed into croquettes with bread crumbs and fried or baked; made into a loaf with bread crumbs, minced vegetables, milk, and seasonings, or made into soup.

A delicious combination dish, called "Hopping John," may be made as follows: Boil 1 quart of cowpeas and a scant pint of rice separately and mix together when done. The rice should be seasoned after it is cooked. Bacon or a beef bone boiled with the cowpeas adds a desirable flavor to the dish. Recipes for other cowpea dishes follow.

Baked Cowpeas.

Cook 1 quart of large, white, dry cowpeas slowly in water until they begin to soften. This will require five or six hours. Put them into a bean pot, add one-half pound of salt pork, and either 1 tablespoonful of molasses or a small onion cut up fine. Cover with water and bake slowly six or seven hours. It is well to have the pot covered except during the last hour.

"Many a Mickle Makes a Muckle."

A SLICE OF BREAD.

A single slice of bread seems an unimportant thing. In many households one or more slices of bread daily are thrown away and not used for human food. Sometimes stale quarter, or half, loaves are thrown out.

Yet one good-sized slice of bread—such as a child likes to cut—weighs an ounce. It contains almost three-fourths of an ounce of flour.

If every one of the country's 20,000,000 homes wastes on the average only one such slice of bread a day, the country is throwing away daily over 14,000,000 ounces of flour—over 875,000 pounds, or enough flour for over a million 1-pound loaves a day. For a full year at this rate there would be a waste of over 319,000,000 pounds of flour—1,500,000 barrels—enough flour to make 365,000,000 loaves.

As it takes 4½ bushels of wheat to make a barrel of ordinary flour, this waste would represent the flour from over 7,000,000 bushels of wheat.

Fourteen and nine-tenths bushels of wheat on the average are raised per acre. It would take the fruit of some 470,000 acres just to provide a single slice of bread to be wasted daily in every home.

To produce this much flour calls for an army of farmers, railway men, flour-mill people. To get the flour to the consumer calls for many freight cars and the use of many tons of coal.

But some one says, a full slice of bread is not wasted in every home. Very well—make it a daily slice for every 4 or every 10 or every 30 homes—make it a weekly or monthly slice in every home—or make the wasted slice thinner. The waste of flour involved is still appalling—altogether too great to be tolerated when wheat is scarce.

Any waste of bread is inexcusable when there are so many ways of using stale bread to cook delicious dishes.

The United States Department of Agriculture, Washington, D. C., or your State agricultural college will tell you how to use stale bread in many ways.

Cowpea Soup.

1 tablespoon butter or pork fat.
1 tablespoon finely chopped onion.
1 stalk celery, finely chopped.
1 cup dry cowpeas.
Salt.

Soak the peas 8 or 10 hours in water enough to cover. Fry the vegetables in the butter, add the peas in the water in which they were soaked, and cook (preferably in a double boiler) until the peas are tender. Put the mixture through a sieve and add water enough to bring it to the consistency preferred. Reheat. If this soup is thickened with 1 tablespoonful of flour mixed with a little water, the pea pulp will not sink.

Purée of Cowpeas.

(Used like mashed potatoes.)

Soak 1 pint of dry cowpeas in cold water over night. Cook until soft in just enough water to cover. Drain and pass through a sieve. Season with salt, pepper, one-half cupful of cream (or milk and a tablespoonful of butter or other fat), and 2 teaspoonfuls of brown sugar. Beat thoroughly, reheat, and serve like mashed potatoes.

Baked Cowpeas and Cheese.

(Substitute for meat roll.)

1 tablespoon butter.
1 tablespoon finely chopped onion.
1 tablespoon finely chopped sweet green pepper or celery.
2 cups cooked cowpeas.
½ cup grated cheese.

Press the peas through a sieve to remove the skins, and mix with the cheese. Cook the onion and pepper or celery in the butter or other fat, being careful not to brown, and add them to the peas and cheese. Form the mixture into a roll, place on a buttered dish and cook in a moderate oven until brown, basting occasionally with butter or other fat and water. Serve hot or cold like meat.

HOW TO SELECT FOODS.

(*Continued from page 9.*)

minerals and body-regulating materials (group 1) she may safely build up the bulk of the diet from any materials from the other groups that seem economical, wholesome, and appetizing.

This method of planning prevents substituting one food for another which has an entirely different use. In general, economy within each group is safer than using an inexpensive food from one group in place of an expensive one from another group.

Scraps of left-over meat or fish can be combined with cereal or other mild-flavored food, both to give flavor and to add nourishment to the total dish.

Vegetables properly prepared tempt the appetite. When they are soggily cooked or poorly seasoned, much of them will be left on the table.

Many persons are unaware that the green and tender tops of many vegetables, such as radishes, turnips, celery, and beets, contain valuable mineral and other food substances, and are excellent cooked as greens, or even as additions to salads.

That vast amounts of nourishing material are thrown out from American kitchens and so made useless for human consumption is well established by the returns from garbage and fertilizer plants showing the amount of fats and nitrogenous material recovered from city garbage.

STRAWBERRY PRESERVES.

Accurate Directions for Preserving Strawberries—Applicable to Household Conditions.

Specialists in commercial handling and preserving of fruits in the Bureau of Chemistry, United States Department of Agriculture, have worked out the following accurate directions (which may be applied also to household conditions) for preserving strawberries so that just enough sirup of the proper consistency can be made in advance. With this amount of sirup the berries can be packed attractively without floating and no sirup will be left over, which in many cases means an important saving in sugar.

Sterilize jars.—While the berries and sirup are cooking, place the empty clean jars and caps in tepid water and bring to a boil, and allow to boil for at least 15 minutes. Remove the jars from the water only as they are to be filled and the caps only when they are to be placed on the jars. Simply drain jars and caps; do not wipe them. One of the inexpensive jar lifters will be convenient in handling the hot jars.

Sterilizing rubber rings.—Do not boil rubber rings for any length of time. Just before placing them on the jars dip the rings for a moment into a quart of boiling water into which 1 teaspoonful of bicarbonate of soda has been added.

Strawberry Preserves.

RECIPE NO. 1.

Sirup.—Add 35 ounces of sugar to one-half pint of water, bring to a boil and skim.

Preserving.—To this amount of sirup add exactly 2¾ pounds of washed, capped, and stemmed strawberries. Boil the fruit until it registers 222° F. on a candy or chemical thermometer. If no thermometer is available, boil until the sirup is very heavy—about as thick as molasses. Remove scum from the preserves.

Packing.—Fill the sterilized jars full of hot berries. Pour in enough of the hot sirup to fill the jar, leaving as little air space as possible. Put sterilized rings and caps on at once, *but do not fasten tightly.*

Sterilizing packed fruit.—Stand the sealed jars in tepid water up to their necks if possible. Bring this water to a boil. Let pint jars stay in the boiling water for at least 15 minutes and quart jars at least 25 minutes, *then close caps tightly at once.* At the conclusion of the operation, stand each jar for a moment on its cap to make sure that the seal is absolutely tight.

RECIPE NO. 2.

The following method is preferred by some because it leaves more of the natural color in the preserves.

To 2 pounds of washed, capped, and stemmed strawberries add 26 ounces sugar, let stand overnight. In the morning pour juice thus obtained into a preserving kettle, add berries, and cook to 222° F. or until the sirup is very heavy. Pack and sterilize as in receipe No. 1.

Importance of Thermometer in Preserving.

The preserving specialists advise those who are going to put up any quantity of preserves to purchase a chemical thermometer which gives readings by degrees Fahrenheit for each degree from 212° up. Equipped with such a thermometer, the preserver can be certain of uniform results. The sirup will not reach 222° F. until it is cooked enough and is of the best preserving consistency. The reason for this is that the sirup will not reach this temperature until the proper amount of water has been driven off by boiling. Such a thermometer is also very useful in all forms of preserving, in candy making, and in other cooking operations where results depend upon exact heating.

The following tested recipe for preserved strawberries is used in the boys' and girls' club work in the Northern and Western States:

"Make a sirup of 1 quart of water and 11 pounds of sugar and cook in an open kettle until a candy thermometer registers 265° when placed in the sirup. Add 8 pounds of berries to the sirup. Cook very slowly, just at the boiling point. Stop the cooking when the thermometer registers 219° and pour into shallow pans to cool. Hasten cooling by pouring sirup over berries. Skim while cooling. Fill into jars when cold and allow to stand unsealed for 4 days. Put rubber and cap in position, not tight. (Cap and tip, if using enameled tin cans.) If using a hot-water bath outfit, sterlize 20 minutes; if using a water-seal outfit, or a 5-pound steam-pressure outfit, or a pressure-cooker outfit, sterilize 15 minutes. Remove jars. Tighten covers. Invert to cool and test the joint. Wrap jars with paper to prevent bleaching, and store."

WATERMELON STEM-END ROT.

Pathologists of the Department Recommend Methods for Its Prevention.

Watermelon stem rot results in a decay of the melon at the stem end, which usually develops during transit to market. The investigations of the United States Department of Agriculture have shown that the cause is a fungus which is common in many southern fields on dead stalks of cotton, corn, and many weeds, as well as on decaying melons. The spores of this fungus are blown about by the wind and lodge on the moist cut end of the melon stem after it is severed from the vine, germinate and grow into the melon, which often begins to decay within three days.

The experiments made last summer on several carloads of melons offer good hopes that this stem-end rot can be prevented. The methods recommended by the department are as follows:

(1) Cut and burn all weeds around the field and along ditch banks during the winter.

(2) From the time that the melons set on the vines all cull fruit should be hauled out of the field weekly and fed to hogs or deeply buried. Wash the wagons used for hauling culls with a 2 per cent bluestone solution.

(3) Spraying with Bordeaux mixture for anthracnose will probably help control stem-end rot.

(4) Laborers harvesting melons should never cut or touch a decayed melon.

(5) Cut melons with long stems and load into cars with the least possible delay and with the utmost care in handling to avoid bruising. Open car ventilators.

(6) Most important of all, apply a paste made of common starch with 6 per cent bluestone to the freshly cut stems as the melons are being packed in the car. It has been found that disinfecting the stems at other times is less effective, as the paste is rubbed off by handling.

As the packer arranges the melons in tiers have him place the stem ends outward, while a reliable boy cuts off a section of the stem and applies a covering of paste with a small, round brush.

(7) Freight cars that have contained decayed melons or yard refuse should be washed clean and sprayed with a 2 per cent bluestone solution,

---

Many persons regard the saving of small amounts of left-over food as unimportant. If they kept accurate account, however, for any period, many families would be astounded by the amount of good food they are throwing out and by the sums that they are paying to the grocer, the butcher, and the milkman to replace good food being absolutely wasted.

Skim milk, too widely looked down upon as a food, although it contains practically all the nourishing elements of whole milk with the exception of the cream or fat, can be used as a beverage, in cooking cereals, or as a basis for milk soups or sauces. Sour milk also, so often thrown away, can be used in making hot breads or in the home manufacture of cottage cheese.

Vegetables and fruits often are stored in quantities in hot, damp, and poorly ventilated bins and under conditions which hasten wilting, fermentation, and decay.

DON'T LET MILK SPOIL
ON THE FARM, IN TRANSIT, OR IN THE HOME

Whole milk, skim milk, and buttermilk are highly nourishing and valuable foods. These foods spoil quickly when allowed to get warm or when exposed to bacteria and molds present in the dust and the air.

Keep Milk Continuously Clean, Cold, and Covered

This injunction applies equally to the producer, the wholesaler, the dealer, and the consumer.

Unclean milk sent from the farm sours and spoils more quickly than clean milk. Pasteurization makes milk safer.

Milk, to keep properly, should never get warmer than 50° F. until it is consumed. The lower the temperature the better the milk will keep.

Bacteria—such as those which cause milk to sour—develop very slowly and cause little change in milk kept at such low temperatures.

A slight rise in temperature, even for a short time, permits these bacteria to multiply rapidly and bring about rapid deterioration of the milk, which may render it unfit for ordinary use.

Don't leave your milk bottles on a hot porch or doorstep. A short exposure in the sun or a warm place hastens the spoiling even of cold, bottled milk.

Have the milkman put your milk into the refrigerator. If this is impossible provide, in warm weather, a box with ice, or a bucket of water in a shady place, for the milk.

At any rate, have the bottles left in the coolest and shadiest place about your premises.

Don't leave milk in bottles or vessels in a warm room for a moment longer than is necessary.

Never pour milk, which has been exposed to the air, back into a bottle containing other milk. Keep such milk cold and covered in another clean utensil.

Keep Milk Clean

Milk, when warm, is an ideal cultural medium for bacteria. Keep milk clean. You can keep it clean only by keeping it covered so that the bacteria and molds from the air will not get into it.

Keep your milk bottles covered either with caps or by placing glasses over them. Keep them covered in the refrigerator and in the kitchen or dining room.

Never pour milk into an unsterile bowl or pitcher. Scald all vessels into which milk is poured for keeping or serving. Cool these utensils after scalding, before you put milk into them.

Before you open a bottle of milk, wash and wipe the outside of the cap with water and a clean cloth. The little depression at the top of the bottle collects dust or water, or milk, which may attract flies. Lift out the cap with a pointed instrument, so that the outside of the cap, which may be contaminated, will not be pushed down into the milk.

Clean and scald the refrigerator where milk is stored, regularly with hot sal-soda solution. See that the drip pipe is kept open and clean.

Even in the cleanest refrigerator, never keep milk in an open vessel. Milk absorbs odors easily.

If there are babies or little children in your home, clean, cold, covered milk is absolutely essential.

Clean Empty Bottles

Finally, clean empty bottles. Rinse thoroughly with cold water every milk bottle, as soon as emptied, and then wash with hot water. This helps your milkman to give you clean milk.

Never take milk bottles into a sick room. If you have an infectious or contagious disease in your home, boil the milk bottles, and do not return them without the express sanction of your local health officer or attending physician.

Don't Throw Out Skim or Sour Milk

Clean skim milk is a valuable food, containing all the nourishing elements of whole milk except the fat or cream. It is useful in cooking cereals, soups, sauces, cocoa, etc., and is a palatable, nourishing beverage.

Sour milk and buttermilk can be used with soda in making hot breads, or sour milk can be easily turned into cottage cheese, or clabber. Sour cream is a good shortening for cakes and cookies, and is useful for salad dressings and gravies for meat.

The U. S. Department of Agriculture will be glad to send you additional information about the care and use of milk.

DEMONSTRATE THRIFT IN YOUR HOME
MAKE SAVING, RATHER THAN SPENDING, YOUR SOCIAL STANDARD

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. VI WASHINGTON, D. C., MAY 23, 1917. No. 42

RAISE MORE CHICKENS.

$600,000,000 Worth of Poultry Products Could Be Added to Our Food Supply This Year.

The statement made at the recent agricultural conference at St. Louis that the poultry products of the United States could be doubled within a year means that if everybody in a position to help did their part $600,000,000 worth of food would be added to our supply this year.

This includes both meat for the table and eggs. Very few farmers practice a systematic plan of disposing of their fowls after they have ceased to be productive, although it is well known that fowls of the heavier breeds, such as the Plymouth Rocks, cease to produce a profitable number of eggs at the end of their second laying year, and that this holds true of the lighter breeds, such as the Leghorns, at the end of their third laying year. Consequently, if efforts were made to dispose of all females when their best laying days were over, a large quantity of poultry meat would be placed on the market. All poorly developed chickens should likewise be culled out and used as meat. This way of disposing of unprofitable fowls would allow the farmer to feed his grain to younger and more productive fowls.

Caponizing the cockerels that are not intended for breeding purposes will not only increase their size but will place a more desirable poultry meat on the market. Another practice that should be adopted more widely is that of fattening all chickens that are to be marketed before they leave the farm. This can be done easily by confining the birds for a week or 10 days and feeding them a good fattening ration. They will come to market then in better condition and the farmer will receive a profit for their added weight.

The greater production of turkeys, ducks, geese, and guineas, all of which can be profitably raised and a ready market found in most sections, would increase the supply of poultry meat considerably. The production of ducks especially should be emphasized at this time, because of the rapidity with which they grow. Ducks of most of the meat breeds, properly fed and managed, frequently weigh from 5 to 6 pounds at 10 weeks of age. It is estimated by poultrymen making a specialty of growing ducks that the feed cost per pound of producing duck meat ranges from 8 cents to 12 cents, depending upon the current prices of grain and other feeds.

The number of marketable eggs can be increased by following a few practical suggestions. Among the most important of these are the production of the infertile egg after the breeding season is over, and the proper handling of eggs by the farmer before sending them to market. The infertile egg is obtained when all male birds are removed from the flock. This does not decrease the number of eggs produced, but it does increase greatly their keeping qualities. The production of the infertile egg and the proper handling and marketing of eggs by the producer would increase tremendously the number of marketable eggs each year by diminishing the quantity that are rendered unfit for food.

An increased production of ducks' eggs is advisable where available markets are found.

The poultry house should be clean and sanitary and the fowls free from insect pests, thereby preventing disease and mortality. It is estimated that nearly $9,000,000 worth of poultry is lost each year through disease alone. Special attention should be given to the feeding and housing of laying fowls at seasons of the year when their natural source of food supply is cut off.

Although the hatching season proper should be considered at an end by May 1, it may be feasible in some sections of the northern and northwestern parts of this country to continue hatching until the 1st of June. Chicks hatched at that time, with proper feed and managment, will frequently begin laying in January of the following year. The maturity of fowls hatched late can be greatly increased if the mother hens are confined until the chicks are weaned. In this way feed that is furnished the chicks produces growth, instead of energy to follow the mother. Extra precautions should be taken in the late spring and early summer to keep the young birds free from lice and disease, both of which cause thousands to die every year. More general use of the incubator and brooder will increase considerably the output of chickens, and consequently the number of layers the following year.

The United States Department of Agriculture and the several State agricultural colleges will be glad to supply helpful information to anyone interested in raising poultry on a large or small scale.

FARM LABOR PROBLEM.

Statements by the Secretary of Agriculture and the Secretary of Labor Outlining Plan of Action.

Statements with regard to the supplying of farm labor were made by the Secretary of Agriculture and the Secretary of Labor on May 1 and May 11, respectively. The statement of the Secretary of Agriculture, which was made before the Committee on Agriculture, House of Representatives, is as follows:

There is one factor in particular of great importance, one about which there is much concern. I refer to the labor supply, not only for the ordinary farming operations but especially for the harvest season. There is general agreement that labor may be the principal limiting factor in increasing production. It is true, generally speaking, that in the section west of the Mississippi River and south of the Ohio River the labor supply is not very far short of normal, but even in that region there are particular areas where there is a shortage reported. The exact extent of it I have no means of knowing. There have been reports of migrations of negroes from Alabama and Georgia.

In the neighborhood of the larger industrial centers, even in the West, there are reports of a considerable shortage of labor. There are reports of greater shortages in the Northeast generally—in the section immediately north of us, in eastern Pennsylvania, in New Jersey, in northern Delaware, in southeastern New York, in southeastern Michigan, and in parts of New England, especially in Connecticut. The creation of a large army will involve some additional abstraction of labor from the farms. It is therefore of the utmost importance that steps be taken to assure the farmers that, in the harvest season especially, they will be able to secure an adequate labor supply. I believe the problem can be solved. It must be, and I believe farmers should have no hesitation in extending their planting to the limit. The Nation must see to it that they have labor to harvest their crops and must extend such aid as may be needed.

Many suggestions have been made looking to its solution. I believe that the problem can be solved largely by organization and cooperation. The department is taking steps to place in each State, in contact with the State central board, a man whose thought and time shall be given to the matter of labor supply and its organization. He will work

with the State central board and the local bodies that are being formed. One of the first things that we shall undertake to do will be to make a sort of farm-labor survey. We know, of course, that even in the same community the load may not come on one farm at exactly the same time that it comes on another. Through cooperation on the part of the farmers, even in the same community, something can be done to mobilize labor, to render help in a pinch on certain farms that need help, through the utilization of labor on other farms which may not, at a given time, be so hard pressed. Over larger areas the possibility of discovering labor in one section to render help in another part is even greater. The load does not come at the same time in different States. Through a careful survey, we can discover surplus labor or labor not fully employed at a particular time in a given section, give information concerning it to the proper agency in another section or State where there is a deficit, and assist in securing the surplus. We shall, as I have pointed out, work with the State central and local agencies and shall cooperate with other Federal departments, particularly the Department of Labor. We have done this in the past with some success without very much organization and without very much previous planning.

In former years, when the crops were large, the Department of Labor has been instrumental in assisting State commissioners of agriculture in certain States to locate labor not then employed in their States and in adjoining States. I think we can do much to make more effective the regular labor remaining on the farms in particular localities. I think we can do something to bring about a transfer of labor temporarily from one section to another. I think it will be possible to call into service labor not heretofore regularly or fully utilized. We have had large numbers of boys and girls organized in clubs rendering useful service. There is an army of nearly 300,000 of them. I have no doubt that it can be extended; that its number can be increased; and that its services can be used in additional directions. It has been estimated that there are over 2,000,000 boys in towns and cities, some of whom have been in touch with rural life, who could be utilized, expecially in harvest seasons, if proper steps to organize them were taken. There are many in rural communities whose service has not been fully utilized. It might be found to be desirable and feasible for schools and colleges in certain sections of the country not to resume their sessions so early in the fall, so that the boys may help on the farms during the harvest season. In some directions girls may render valuable and valiant help.

I am not trying to indicate all the methods we might employ or persons we might utilize, but simply to give some hints. Whether it will be necessary to go further, I can not now say; but, since ample food is so fundamental a need in this crisis, no step to render aid should be omitted which the emergency may require, and the farmers should know this.

Statement of the Secretary of Labor.

In order to meet the emergent need of farmers for labor, which war conditions have produced or intensified, the Department of Labor has entered into a mutual understanding or arrangement with the Department of Agriculture.

Pursuant to this arrangement, the Department of Agriculture is to undertake to make a survey of the farm labor needs and supply in rural districts, to assist State agencies in organizing it, and, through them, to assist farmers in securing adequate help. It will also advise the Department of Labor of demands for farm work which must be supplied from other sources. The Department of Labor is to procure and distribute workers from towns and cities who are not of the regular farm labor class.

The Department of Labor is accordingly devoting its United States Employment Service to the emergency work in question. This service, which consists of a force of experienced employment managers at branches and sub-branches covering all the territory of the United States, with headquarters at Washington, has also developed special facilities, actually in operation during the past three seasons in cooperation with the National Farm Labor Exchange of the wheat belt, for supplying extra help to that region.

In connection with its United States Employment Service, cooperative understandings have been made by the Department of Labor with official employment agencies of several States and cities, under some of which Federal-State and Federal-State-municipal cooperation are practically under way. Similar arrangements with the other States are being solicited by the department.

Collateral to this employment service, the Department of Labor has undertaken to federate the boys' clubs of cities and towns for the purpose of grouping club boys of from 16 to 19 years of age for vacational work in aid of farmers.

It is also promoting plans put forth in its annual reports of 1915 and 1916 for offering vacational services on farms by groups of industrial workers of towns, cities, and mining regions, whose employers agree with it to allow vacations at times appropriate for seasonal farm service.

KEEP BREEDING ANIMALS.

They Are the Seed Essential for the Nation's Live-Stock Industry.

"Don't sell your breeding animals unless you can replace them immediately with better ones," is the message the United States Department of Agriculture is sending to farmers and stockmen everywhere. "Don't let the temptation of high prices now being offered for live stock or undue fear of the prices asked for many popular feeds mislead you into selling a cow or sow that will drop the golden calf or litters. Such near-sighted profit taking or lack of courage, if widespread, would strike at the foundation of the country's live-stock industry and cripple it for years to come. As there is a shortage of meat animals throughout the world, we can not hope to import new breeding stock to replace those we foolishly have killed off. Our own breeding animals, therefore, must be regarded as the seed essential to the domestic meat supply of the Nation.

DON'T SELL BREEDING ANIMALS.

Maintain and increase breeding herds.
Feed cheap roughages.
Feed live stock as little human food as possible.

"Feeds not available or needed for human consumption should be used as largely as possible in feeding live stock. By feeding straw or corn stover, especially for wintering mature stockers and breeding animals, farmers will make the best possible use of these roughages. In this way a large proportion of the straw and stover ordinarily burned or wasted can be manufactured into meat and milk. Grain sorghums, wherever they are available, should be fed to release corn for human uses. Grain, where fed, should be used as economically as possible.

"Every animal should be a factory for turning into food material inedible for human beings. This will necessitate changes in many feeding formulas, and stockmen are urged to apply at once to the United States Department of Agriculture or their State agricultural colleges for information as to the most effective and economical methods of feeding live stock under existing emergency conditions."

DON'T USE RHUBARB LEAVES.

Because rhubarb leaves contain certain substances which make them poisonous to a great many persons, specialists of the United States Department of Agriculture warn housewives against using this portion of the plant for food. A number of letters have been received by the department calling attention to the fact that certain newspapers and magazines are advocating the use of rhubarb leaves for greens, and that disastrous results have followed the acceptance of the advice.

CULTIVATE CORN.

Begin Early—Start to Kill Weeds and Conserve Moisture Before Plants Are Up if Need Be.

Cultivation should not be delayed in the corn until the field looks weedy. Only a little stirring of the soil is required to kill weeds immediately after they germinate and before they have used much soil moisture, but to destroy weeds that are well rooted, the soil must be worked deeply and thoroughly. Such deep cultivation, specialists in the United States Department of Agriculture say, not only means more labor but it can not be accomplished without breaking and destroying many corn roots.

If corn land has been properly prepared, deep cultivation is not advisable. It should never be done close to the plants after they are a foot high, as much harm would be done by breaking the roots.

To get an early start of the weeds, in many sections or in seasons when seed germinates slowly, it is advisable to harrow once or twice or otherwise to cultivate the field before corn comes up. Limited moisture makes thin stands necessary and it is poor management to allow grass and weeds to rob the corn of this moisture.

Aside from destroying weeds, timely cultivation is beneficial in preventing the loss of moisture by evaporation and also in hastening the warming of the soil. The loss of soil moisture by evaporation continues much longer from a compact, damp surface than from a loose, dry surface, and the evaporation tends to keep the soil cold.

In northern localities and at high altitudes the conservation of heat is frequently as important as the conservation of moisture. Luckily, both heat and moisture may be conserved by good, timely cultivation. Heat is wasted in evaporating or wasting soil moisture. Making the surface loose and dry saves both soil heat and soil moisture.

Cultivating after heavy rains is a good practice. To be most effective the cultivating should be done as soon as the surface is dry enough to work well. If the soil is allowed to dry until it breaks up cloddy, much moisture will be lost, a good mulch can not be obtained, and harm is more likely to be done to the corn roots. As long as rapid evaporation is taking place, the surface will remain cold and the growth of the corn will be slow. In order to cover large areas quickly, cultivators which work two or more rows are a great advantage.

The number of cultivations necessary and the best time for them depend upon weather and soil conditions. Weeds should not be allowed to grow, and a mellow surface should be maintained. In some seasons this may be effectually accomplished with one or two cultivations; in other seasons from four to six cultivations may be necessary.

Nothing can be gained by continuing cultivation in cornfields free from weeds and in which the soil surface is mellow. When the surface is sufficiently loose and dry to reduce evaporation, is open enough to prevent run-off, and no weeds are starting, a cultivation could do no good and if carelessly performed would do injury to the corn.

Corn should be cultivated only when one or more objects will be accomplished by the cultivation and when the total effects will be more beneficial than injurious. The beneficial effects of cultivation are:

(1) Preventing weeds from robbing the corn of soil moisture and fertility.

(2) Putting the surface in condition to take in rainfall, thus preventing run-off and erosion, which mean losses of water and soil fertility.

(3) Warming the soil by drying its surface quickly.

(4) Saving moisture by checking its capillary rise to the soil surface.

Some injurious effects of cultivation are:

(1) Breaking the corn roots which otherwise would use some of the moisture of light showers before it evaporates; and

(2) Forming large clods and air spaces, thus permitting air to enter and dry the soil.

BETTER STALLIONS.

Importance of Good Blood in Sires Becoming More Generally Recognized By Horse Breeders.

The use of inferior stallions has hampered progress in horse breeding in this country to such an extent, says an article in the new Yearbook of the United States Department of Agriculture, that this industry has not kept pace with other forms of stock raising. Many horse owners have failed to realize that it is as expensive to raise the kind of colt which no one wants as it is a high-grade one. They have thought too much of the higher fee demanded for the service of a sound pure-bred stallion and too little of the value of the resulting foal.

Recent legislation in many States, however, has done much to remedy this situation. This movement may be said to have had its beginning in the Wisconsin law regulating the public service of stallions and jacks, which became effective on January 1, 1906. Since that time 20 additional States have enacted legislation of a similar character.

The various laws enacted by these States differ in detail, but, in general, it may be said that they have compelled stallion owners to represent their animals as they are, and have thus made it possible for every farmer and mare owner to know exactly to what he is breeding his mares. A noticeable effect of such legislation has been to decrease the percentage of unsound and mongrel stallions in the States affected. In Wisconsin the figures have been almost completely reversed. In 1906 the grade and scrub stallions licensed represented 60 per cent of all the stallions in the State, and the pure breds 40 per cent; and in 1915 the grades and scrubs formed only 42 per cent, while the pure breds had increased to 58 per cent.

It is probable that the mongrel stallions driven out from those States in which they are compelled to show their true colors are being taken into sections where there is as yet no stallion legislation, and are there advertised by their owners as grades or pure breds.

In such States breeders should exercise the greatest caution before taking their mares to a stallion. They should examine minutely the certificate of registration and pedigree and ascertain whether the animal is properly registered in a reliable studbook and whether the description on this certificate corresponds in every detail to the animal in question. If there is any discrepancy it is evident that something is wrong. In such cases it is much more economical to seek out another stallion and pay possibly a higher fee rather than run the risk of getting a nondescript foal, which is expensive to raise and for which no good market can be found.

The amount of the fee is indeed a small consideration. No stallion should be used which will not improve rather than degrade the offspring from mares. In this connection, the article already mentioned points out that it is well known that stallions of impure breeding lack the prepotency of the pure bred and fail to stamp their offspring with breed characteristics, and often even with individual merit.

NO SEED TO DISTRIBUTE OR SELL.

No seed for free distribution nor for sale is at the disposal of the United States Department of Agriculture. The department, however, through its committee on seed stocks, is receiving daily telegraphic and other reports as to available supplies of seeds of crops for late plantings, and will assist in locating seed stocks for localities where shortages exist. The committee is cooperating with State, local, and commercial agencies in an effort to secure better distribution of seed and to encourage plantings of all important crops.

Information regarding shortages and surplus stocks should be addressed to R. A. Oakley, Chairman Committee on Seed Stocks, United States Department of Agriculture, Washington, D. C.

CUTTING SWEET CLOVER.

Unless Care Is Taken in Regard to Time and Height of Stubble a Stand May Be Killed.

Examination of hundreds of acres of sweet clover in different sections of the United States during 1915 and 1916 showed that the stand on at least 50 per cent of the fields was partly or entirely killed by cutting the first crop of the second season too close to the ground. That is the report of a specialist in forage crop investigations of the United States Department of Agriculture, included in Farmers' Bulletin 820, "Sweet Clover: Utilization," soon to be published. To prevent the loss of stands, the specialist says, farmers should examine the fields carefully before mowing to determine the height at which the plants should be cut. At least one healthy bud or young branch should be left on each stub. In fact, the plants should be cut several inches above the young shoots or buds, as the stubble may die back from 1 to 3 inches if they are cut during damp or rainy weather.

Because of the difference in the growth that sweet clover makes on different types of soil and because of the difference in thickness of stands in different fields, it is impossible, the specialist says, to state definitely the proper height to cut the first crop the second season when a second crop is to be expected. When the field contains a good stand and when the plants have made no more than a 30-inch growth, a 5 to 6 inch stubble usually will be sufficient to insure a second crop. When fields contain very heavy stands—15 to 25 plants to the square foot—it may be necessary to leave an 8-inch stubble. When the plants have been permitted to make a 36 to 40 inch growth, a stubble 10 to 12 inches high should be left. In semiarid regions where the plants do not make as rapid growth as in humid sections, they may, as a rule, be cut somewhat closer to the ground without injury.

The proper time to cut the first crop the second season will vary in different localities, depending upon the rainfall, the temperature, and the fertility of the soil. In no event should the plants be allowed to show flower buds or become woody before mowing. On fertile, well-limed soils in many sections a very rapid growth is made in the spring, and often the plants will not show flower buds until about 5 feet high. On such soils it is essential that the first crop be cut when the plants are no more than 30 to 32 inches high, if hay is desired which is not stemmy, and if a second growth is to be expected. In cutting the first crop of the second season it is a good plan to use extension shoe soles on the mower, so that a high stubble may be left.

It is not necessary to leave more than an ordinary stubble when cutting the sweet clover hay crop in the fall of the year of seeding. A stubble 4 or 5 inches high, however, will serve to hold drifting snow and undoubtedly will be of some help in protecting the plants from winter injury.

In some sections of the country it is difficult to cure sweet clover hay because the stand is ready to cut at a time of the year when weather conditions are likely to be unfavorable for haymaking. Succulent plants like sweet clover can not be cured into hay of good quality unless excellent weather conditions prevail during the haying period. One of the most successful methods for handling sweet clover hay is to allow the plants to remain in the swath until they are well wilted, or just before the leaves begin to cure. The hay should then be raked into windrows and cocked at once. The cocks should be made as high and as narrow as possible, as this will permit better ventilation. In curing, the cocks will shrink from one-third to one-half their original size. It may take 10 days to 2 weeks to cure sweet clover by this method, but when well cured all the leaves will be intact and the hay will have an excellent color and aroma. When sweet clover is cocked at the proper time the leaves will cure flat and in such manner that the cocks will readily shed water during heavy rains.

In stacking sweet clover, a cover should be provided, either in the form of a roof, a canvas, or long, green grass. A foundation of rails, posts, or boards is desirable, as this will permit the circulation of air under the stack. No instances of spontaneous combustion in sweet clover hay have been noted, says the writer of the bulletin, but this may be due to the fact that comparatively little sweet clover hay is stored in barns. The same precautions in this regard should be taken with sweet clover hay as with red clover or alfalfa.

ECONOMY IN LEATHER.

Simple Measures Recommended for Increasing the Wear of Shoes and Preserving Harness.

War demands leather—leather for soldiers' shoes, leather for harness, leather for equipment of many kinds. In this country there is no such surplus that we can afford to waste any of it; and it is wasting leather not to care for and preserve it properly. In the Army and out, we all wear shoes. If we manage them rightly, they will last longer, we will not need so many new ones, and there will be more left for others. The following suggestions from the Leather and Paper Laboratory of the United States Department of Agriculture can be utilized by everyone who walks.

To Save Shoes.

Shoes should be oiled or greased whenever the leather begins to get hard or dry. They should be brushed thoroughly, and then all the dirt and mud that remains washed off with warm water, the excess water being taken off with a dry cloth. While the shoes are still wet and warm, apply the oil or grease with a swab of wool or flannel. It is best to have the oil or grease about as warm as the hand can bear, and it should be rubbed well into the leather, preferably with the palm. If necessary the oil can be applied to dry leather, but it penetrates better when the latter is wet. After treatment, the shoes should be left to dry in a place that is warm, not hot.

Castor oil is satisfactory for shoes that are to be polished; for plainer footgear neat's-foot, fish oil, or oleine may be substituted. If it is desired to make the shoes and boots more waterproof, beef tallow may be added to any of these substances at the rate of half a pound of tallow to a pint of oil. The edge of the sole and the welt should be greased thoroughly. Too much grease can not be applied to these parts.

A simple method of making the soles more durable, pliable, and water resistant is to swab them occasionally with linseed oil, setting them aside to dry overnight.

Many of the common shoe polishes are harmful to leather. All those which contain sulphuric, hydrochloric, or oxalic acids turpentine, benzine, or other volatile solvents, have a tendency to harden the leather and make it more liable to crack.

It is poor economy, too, to wear a shoe with the heel badly worn on one side. This throws the shoe out of shape and may soon result in its ruin. It is also likely to cause temporary injury to the foot.

To Preserve Harness.

Harness leather, like shoes, can not be neglected without injury that lessens its durability. It should be washed and oiled frequently. The washing should be done in tepid water with a neutral soap and a sponge or stiff brush. After rinsing in clean tepid water, the harness is hung up to drain a little while before oiling.

For driving harness neat's-foot or castor oil is best, but for heavy harness there may be some tallow in the oil. The applications should be light for driving and liberal for heavy harness. The oil, warm to the hand, is rubbed thoroughly into the leather while it is still wet from the washing. Excess oil which the leather is unable to take up should be removed with a clean, dry cloth.

Sweet clover is adapted to a wider range of climatic conditions than any of the true clovers, and possibly alfalfa.

RAISE TURKEYS.

Profitable Side Line for Grain and Stock Farms — Breeding Stock Should Be Selected with Care.

Because the number of turkeys in the United States has constantly decreased in the last few years while the demand has perhaps increased, a more profitable side line than turkey raising for those favorably situated for the work could hardly be found. Given plenty of range, it is pointed out by the United States Department of Agriculture in Farmers' Bulletin No. 791, turkeys will readily find grasshoppers and other insects, green vegetation, the seeds of weeds and grasses, waste grains, and acorns and nuts of various kinds. In this way the cost of raising them is small and the profits large. Grain and stock farms are particularly well adapted to turkey raising, and it is in such places that most of the turkeys are found. Little has ever been done in the way of raising turkeys in confinement, and when it has been tried the results have been discouraging.

Selection of Breeding Stock.

One of the most important steps toward success in turkey raising is the proper selection of breeding stock. Unhatchable eggs, weak poults, and small, scrubby turkeys are largely the result of carelessness in the selection of the parent stock. In selecting turkeys for breeding purposes, strength and vigor are the first points to be considered. To indicate this the body should be deep and wide, the back broad, and the breast round and full. The head should be of good size and of a clean, healthy appearance. A strong, well-made frame is shown by thick, sturdy shanks and straight, strong toes.

Inbreeding is harmful and if carried on very long will result in the loss of vigor and vitality. It is therefore advisable each year to obtain a new tom of unrelated blood, but of the same type. Nothing is to be gained by crossing varieties, as such practice soon reduces pure breds to mongrels.

The most satisfactory time of year to select breeding stock is November or December. By purchasing early in the season one not only has a larger number to choose from, but the birds are given ample time to become acquainted with their new surroundings before the mating season, which in the South ordinarily begins early in February and in the North about a month later.

Fifteen turkey hens can safely be mated to a vigorous tom. If 25 or 30 hens are kept, two toms should not be allowed to run with them at the same time, but one should be confined one day and the other the next.

If breeding pens are used to confine the laying hens for a part of each day they should be of hog-proof wire. Rail, board, or stone fences are of no value for confining turkeys, which easily fly on top of them and then jump down on the other side. In the case of a wire fence, however, there is no place on which to alight, and under ordinary circumstances they do not make the attempt. For this reason steel posts are better than wooden posts for a turkey fence unless the latter are sharpened at the tops.

Good breeding condition means being well fleshed, but not fat. Given free range where there is ample supply of natural feed during the winter and early spring, such as is usually the case in the southern portion of the United States, a good daily feed of grain, preferably oats or wheat, is sufficient to keep the birds in good condition. During the winter northern turkey raisers usually feed twice a day on equal parts of oats, wheat, and corn, with vegetables such as potatoes, turnips, beets, and cabbage as a substitute for green feed. Animal feed at this time of year is essential to the best results, and can be supplied by feeding meat scrap, beef livers and lungs, or skimmed milk, either sweet or sour.

Care of Eggs.

When there is danger that the turkey eggs may be chilled or destroyed, they should be gathered every day and a nest egg left in each nest. Eggs for hatching should be kept at a temperature of as near 50° or 60° F. as possible and should be turned over every day. They should be jarred as little as possible while handling and should be incubated while still fresh, never holding more than two weeks if it can be helped. It is an excellent plan to mark the date on each egg as it is gathered, in order to be certain that no eggs are kept too long before they are incubated.

Turkey hens are very close sitters, and if managed properly they are the surest means of hatching turkey eggs that can be used. Incubators, however, are quite as successful with turkey eggs as with chicken eggs. The incubation period of turkey eggs is 28 days. The first egg is usually pipped during the first part of the twenty-seventh day, the first poult hatched by the middle of that day, and the hatch completed at the end of 28 days, although in extreme cases all the poults are not hatched before the end of 30 days.

The average number of poults raised under ordinary conditions is about 50 per cent of those hatched, or about 7 for each turkey hen. By far the greater part of this loss occurs when the poults are under a week old. Unless through an outbreak of disease, few are lost after they are a month old. The high mortality amoung young poults is mainly due to exposure to dampness and cold, improper feeding, close confinement, lice, predatory animals, and inherent weakness, the latter the result of carelessness in the selection of parent stock.

A good plan is to have a substantial coop for each brood of turkeys. The mother turkey should be confined in this coop soon after her young are hatched and should be kept there for several weeks while the poults are allowed to run about. The coop should be placed in a well-drained place and should be moved each day. When two turkey hens with broods of about the same age are turned out on free range together they will remain in one flock, and as this makes it easier to hunt them up and care for them it is advisable to turn out 2 or 3 hens with their broods together when they are given free range. It is not a good plan to have more than this number of young poults in one flock, however, as they may all try to crowd under one or two hens to be hovered.

Improper feeding, combined with close confinement, has been the cause of many failures in turkey raising. When on free range the poults are busy searching for feed most of the day. Here there is no overfeeding and lack of exercise, such as the poults are often subjected to by those ignorant of their wants. If the range is plentifully supplied with green feed, grasshoppers, and other insects, and if the weather is favorable, then the best plan is to allow the poults to feed themselves. It is usually advisable, however, to have them come home at night, and if driven up and fed at a certain place every night they will soon learn to come up themselves.

TO STOP BAD-EGG TRAFFIC.

A number of egg shippers in Kansas, Nebraska, Oklahoma, and the Panhandle section of Texas have been cited to appear before the Bureau of Chemistry, United States Department of Agriculture, to show cause why they are not guilty of violating the Food and Drugs Act by shipping in interstate commerce cases of eggs containing large numbers of rots and spots. The Food and Drugs Act prohibits the interstate shipment of bad eggs, which are held to be adulterated food. This action follows investigations made during 1916 at Denver, Colorado Springs, Pueblo, and Trinidad, Colo. After hearing the department will take such action as is warranted by the facts in each case. The department also is notifying egg shippers in this territory to candle all eggs before shipment in interstate commerce and is announcing that it will be glad to send them information on candling to enable them to comply with the Federal law.

The value of pineapples exported from Hawaii during the year ending June 30, 1915, was $6,319,000.

HOME-MIXED FLOURS.

How to Use Bran, Corn Meal, Rice, Rye Flour, or Rolled Oats with Wheat Flour in Bread Making.

The use of flours which contain more or less bran is sometimes advisable both for the sake of the variety which they give to the diet and because of the mineral substances and growth-regulating substances these flours contain. Farmers' Bulletin 8 7 of the United States Department of Agriculture, "Bread and Bread Making," includes, in addition to white-bread recipes, a number for homemade bread from whole wheat or graham flour, from home-ground flour, from rye, rolled oats, etc. These are as follows:

Whole-Wheat or Graham Bread.

1½ cups lukewarm milk.	3 cups whole-wheat or graham flour.
3 tablespoons brown sugar.	½ yeast cake.
1¼ teaspoons salt.	

Scald the milk, together with the sugar and salt. When lukewarm, add the yeast, mixing it first with a little of the milk. Add the flour, beat well, and let it double its volume. Beat it thoroughly, put into a pan, and let it rise. In a pan of standard size it should come nearly to the top.

The above recipe may be used in preparing bread from home-ground meal. There are many homes, particularly in the country, where the housewife can obtain unground wheat at moderate cost. If ground in the ordinary coffee mill, such wheat makes a coarse bread, not very light in texture, but of such good flavor that it may well be used occasionally to give variety to the diet. It is useful, too, in places where good bran can not be obtained easily and where coarse breads are desired as a means of preventing constipation. In making such bread with a view to economy the housekeeper should compute what it will cost her per loaf, including labor and fuel, as compared with other breads she makes. Skim milk instead of whole milk can be used; homemade yeast either liquid or dry cake, is a possibility, and some might like the bread with less sugar or unsweetened. Another recipe which has been worked out follows:

Home-Ground Wheat Bread.

1½ cups water or skim milk.	3 cups home-ground wheat flour.
1¼ teaspoons salt.	½ cake dry yeast, or
1 tablespoon sugar.	1 gill liquid yeast.

Set a sponge at night, using half of the flour. In the morning add the rest of the flour, beat well, put into a greased pan, allow to rise until it doubles its bulk, and bake.

"Many a Mickle Makes a Muckle."

ONE-HALF CUP OF MILK.

Half a cup of milk—whole, skimmed, or sour—a seemingly trifling matter—hardly worth the trouble to keep or use.

In many households quite a little milk is wasted—left uncovered in glasses—regarded as useless because the cream has been skimmed off—allowed to sour—poured down the sink or thrown out.

Now, if every home—there are 20,000,000 of them—should waste on the average one-half cup daily, it would mean a waste of 2,500,000 quarts daily—912,500,000 quarts a year—the total product of more than 400,000 cows.

It takes a lot of grass and grain to make that much milk—and an army of people to produce and deliver it.

But, every household doesn't waste a half cup of milk a day? Well, say that one-half cup is wasted in only one out of a hundred homes. Still intolerable—when milk is so nutritious—when skim milk can be used in making nutritious soups and cereal dishes—when sour milk can be used in bread making or for cottage cheese.

The United States Department of Agriculture, Washington, D. C., or your State agricultural college will tell you how to use left-over milk—sweet, skimmed, or sour.

Corn-Meal-and-Wheat Bread.

1½ cups milk, water, or a mixture of the two.	1½ teaspoons salt.
½ cake compressed yeast, or 1¼ cups milk, water, or a mixture of the two.	1 tablespoon sugar.
¼ cup liquid yeast.	Butter (if used), 1 tablespoon.
	1 cup corn meal.
	2 cups wheat flour.

Pour 1¼ cupfuls of the water over the corn meal, salt, sugar, and fat (if used), and heat the mixture gradually to the boiling point or nearly to it and cook 20 minutes. This cooking can best be done in a double boiler. The water is sufficient only to soften the meal a little. Allow the meal to cool to about the temperature of the room and add the yeast, mixed with the rest of the water (¼ cupful), or the ¼ cupful of liquid yeast. Mold thoroughly, let rise until it doubles its bulk, make into a loaf, place in a pan of standard size, allow to rise until it nearly fills the pan, and bake 45 or 50 minutes.

Rice Bread.

1 cup lukewarm water, milk, or a mixture of the two.	1 tablespoon sugar.
1 cup uncooked rice.	Butter (if used), 1 tablespoon or less.
1¼ teaspoons salt.	½ cake compressed yeast.
	2 cups wheat flour.

Steam the rice with one-half of the liquid until it is soft. This is done better in a steamer than in a double boiler, for the liquid is so small in amount that the rice does not become soft readily and the presence of the steam helps. Put the sugar, salt, and fat (if used) into the mixing bowl and pour over them the remaining liquid (½ cupful). When the mixture has become lukewarm add the yeast and ½ cupful of flour. Allow this sponge to rise until very light. Add the boiled rice, which should have been cooled until lukewarm, and the rest of the flour. This dough is so thick that some pressure is required to work in the last portions of the flour. Allow the dough to rise until it has doubled its bulk, form into a loaf, place in a pan of standard size, allow it to rise until it nearly reaches the top of the pan, and bake.

Rye Bread.

1 quart milk.	1 cake compressed yeast.
2 tablespoons sugar.	3 cupfuls flour (1 cup being wheat and the remainder rye).
4 teaspoons salt.	
2 tablespoons butter.	

Follow the directions for making wheat bread according to the short process until after the bread has been molded the second time. At this point the dough should be placed in a 6-quart bowl lined with a cloth into which flour has been rubbed. When the dough has risen to the top of the bowl turn out on a hot sheet iron (a dripping pan inverted will do), over which 1 tablespoonful of flour has been sprinkled, and put it immediately into a very hot oven. After 10 minutes lower the temperature somewhat and bake for 1 hour. This recipe is a modification of an old German household method of making rye bread.

Rolled-Oats Bread.

2 cups boiling water.	¼ cup lukewarm water.
½ cup brown sugar.	1½ cups rolled oats.
2 teaspoons salt.	5 cups flour.
1 yeast cake.	

Dissolve the yeast cake in the lukewarm water. Pour the boiling water over the rolled oats, salt, and sugar, and let stand until lukewarm; add the dissolved yeast and flour. Let rise until very light, beat thoroughly, and turn into two buttered bread pans. When the loaves have doubled their volume bake them an hour in a moderate oven.

Poison ivy can always be distinguished from similar plants by its leaflets, which are arranged in threes, the center one borne on a slightly longer stalk than the other two. It is a perennial plant, propagated by means of creeping underground stems or rootstocks and also by the seeds.

The early American colonies made several attempts to grow alfalfa, but without great success. George Washington grew trial plats of alfalfa on his Virginia farm, and Thomas Jefferson gave considerable attention and care to its cultivation. Their efforts, however, proved unsatisfactory, since they did not understand all of the requirements for the successful growth of the plant.

HOMEMADE BREAD.

Simple Recipes Which Should Enable the Inexperienced Housewife to Produce Satisfactory Results.

By the home baking of bread—the largest single item in the diet in almost every household—housewives should be able in many cases to reduce expenditures for food, say specialists of the United States Department of Agriculture. The making of this important food in the home is a relatively simple process, the specialists point out. Even housewives not accustomed to home baking should be able to produce satisfactory results by using the following simple recipes of the department:

White Wheat Bread—Short Process.

For one loaf of bread pour one cup of boiling water, scalded milk, or a mixture of the two, into a mixing bowl over one teaspoon salt, one tablespoon sugar, and one tablespoon lard or other fat, if fat is desired. Allow the mixture to cool until it is lukewarm. Mix one-half cake compressed yeast with a little of the lukewarm liquid and pour it into the other mixture. If liquid yeast is substituted for the compressed sort, the ingredients should consist of one-fourth cup of yeast, three-fourths cup milk, water, or milk and water mixture, and the quantities of the other substances already mentioned.

If convenient, set the mixture of yeast, liquid, salt, sugar, and fat aside in a warm place, not over 86° F., for an hour before adding the flour. If not convenient to set the mixture aside, add the flour at once, putting in a little at a time and kneading until the dough is of such consistency that it sticks neither to the bowl nor to the hands. This requires about 10 minutes. After the flour is added, cover and allow to rise 1¾ hours at a temperature of 86°; it may be better to set it at a lower temperature, but the lower the temperature the longer the time required for the rising. Cut down the dough from the sides of the bowl; grease the hands slightly. Knead a little and set aside to rise again for one hour. With a good bread flour the dough should treble its bulk in each rising. With a soft wheat flour it should not rise much beyond twice its volume. Divide into portions, mold, and place in greased pans of standard size (1½ quarts). Allow to rise until a light touch will make a slight dent. With good bread flour this happens when the dough reaches the top of the pans. Bake 50 minutes.

Short Sponge Method.

The short sponge method requires setting for a considerable period. All ingredients are the same as for the short process, but only half the flour is added at first. When the resulting mixture, which is called a "sponge" is so light that it will fall at the slightest touch, the rest of the flour should be added.

Overnight Sponge Method.

Use the same proportions as for the short process, except in the case of the yeast, which should be one-eighth cake of compressed yeast or 2 tablespoonfuls of liquid yeast for each loaf. Use water rather than milk. In the evening mix the yeast with water, salt, and half of the flour, and beat thoroughly. Cover and place at a temperature of 65° to 70° F., or that of an ordinary room. In the morning add the sugar and the rest of the flour and proceed as in the case of the short process.

Overnight Straight-Dough Method.

Use the same ingredients as for the overnight sponge method, but put in all the ingredients at night.

Mixed Wheat Flour Breads.

The recipes given above for white bread can be followed in making bread out of part graham and part white flour. The usual proportions are either one part of graham to two parts of white, or half graham and half white. In all cases, however, white flour should be used for making the sponge. In place of the sugar an equal amount of molasses may be used. Such bread will not rise quite as much as bread made with white flour only.

Whole-Wheat or Graham Bread.

1½ cups lukewarm milk.	3 cups whole-wheat or graham flour.
3 tablespoons brown sugar.	½ yeast cake.
1¼ teaspoons salt.	

Scald the milk, together with the sugar and salt. When lukewarm, add the yeast, mixing it first with a little of the milk. Add the flour, beat well, and let it double its volume. Beat it thoroughly, put into a pan, and let it rise. In a pan of standard size it should come nearly to the top.

The above recipe may be used in preparing bread from home-ground meal. There are many households, particularly in the country, where clean whole wheat can be obtained at moderate cost. If ground in the ordinary coffee mill, such wheat makes a coarse bread, not very light in texture, but of such good flavor that it may well be used occasionally to give variety to the diet. It is useful, too, in places where good bran can not be obtained easily and where coarse breads are desired as a means of preventing constipation.

In making such bread with a view to economy the housekeeper should compute what it will cost her per loaf, including labor and fuel, as compared with other breads she makes. Skim milk instead of whole milk can be used; homemade yeast, either liquid or dry cakes, is a possibility, and some might like the bread with less sugar or unsweetened. Another recipe which has been worked out follows:

Home-Ground Wheat Bread.

1¼ cups water or skim milk.	3 cups home-ground wheat flour.
1½ teaspoons salt.	½ cake dry yeast or 1 gill of liquid yeast.
1 tablespoon sugar.	

Set a sponge at night, using half of the flour. In the morning add the rest of the flour, beat well, put into a greased pan, allow to rise until it doubles its bulk, and bake. (For particulars as to setting the sponge, etc., see directions for making wheat bread.)

EAT MORE CORN.

The Most Effective Substitute for Wheat at Our Disposal.

Ordinarily the quantity of corn produced in the United States is from three to four times the quantity of wheat, but only a very small portion of the crop—from 5 to 10 per cent—has been used for human food. This amount may be estimated in normal times at about 200,000,000 bushels a year. Not over 5 per cent has been exported in peace times. A relatively slight increase in the corn acreage, therefore, will place many millions of bushels more of human food at the disposal of the world without interfering in any way with the feed needed for the support of live stock.

In the past, with an abundance of grain of other kinds, corn has not been in great demand for human consumption. But with other grains no longer abundant, circumstances will compel more general recognition of the value of corn as human food. The department is urging strongly the wider use of corn in the diet. It is the best substitute for wheat that we have and can be utilized in breads, mushes, and a variety of other ways. We should make every effort to avail ourselves of it.

Sorrel can be destroyed by spraying with a solution of sulphate of iron (copperas) made at the rate of 2 pounds per gallon of water. The treatment will not permanently injure grass and will destroy the weed if repeated as often as the sorrel tries to send out new leaves. Iron sulphate is deadly to clovers and to many broad-leaved weeds, but is not injurious to animals or to the soil. The spraying method is useful where the sorrel occurs simply as patches in a good stand of grass, or for working around rocks and fences.

PRODUCE INFERTILE EGGS!

Infertile Eggs Keep Best and Market Best in Summer Heat
Fertile Eggs Spoil Quickly in Summer Weather

FERTILE EGGS COST THE FARMER AN ENORMOUS SUM EACH YEAR

Farmers lose millions of dollars annually from bad methods of producing and handling eggs. One-third of this loss is preventable, because it is due to the partial hatching of fertile eggs which have been allowed to become warm enough to begin to incubate.

The rooster makes the egg fertile
The fertile egg makes the blood ring

You can save the money now lost from blood rings by keeping the male bird from your flock after the hatching season is over.

The rooster does not help the hens to lay. He merely fertilizes the germ of the egg. The fertile germ in hot weather quickly becomes a blood ring, which spoils the egg for food and market. Summer heat has the same effect on fertile eggs as the hen or incubator.

INFERTILE EGGS WILL NOT BECOME BLOOD RINGS

After the hatching season cook, sell, or pen your rooster. Your hens not running with a male bird will produce infertile eggs—quality eggs that keep best and market best.

Rules for Handling Eggs on the Farm—

Heat is the great enemy of eggs, both fertile and infertile. Farmers are urged to follow these simple rules, which cost nothing but time and thought and will add dollars to the poultry yard returns:

1. Keep the nests clean; provide one nest for every four hens.
2. Gather the eggs twice daily.
3. Keep the eggs in a cool, dry room or cellar.
4. Market the eggs at least twice a week.
5. Sell, kill, or confine all male birds as soon as the hatching season is over.

NOTICE. Valuable published information on the raising and care of poultry and eggs and individual advice on these subjects may be obtained by writing to the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., MAY 30, 1917. No. 43

STATEMENT BY THE PRESIDENT.

The President of the United States issued the following statement on May 19, 1917:

It is very desirable, in order to prevent misunderstandings or alarms and to assure cooperation in a vital matter, that the country should understand exactly the scope and purpose of the very great powers which I have thought it necessary in the circumstances to ask the Congress to put in my hands with regard to our food supplies. Those powers are very great indeed, but they are no greater than it has proved necessary to lodge in the other Governments which are conducting this momentous war, and their object is stimulation and conservation, not arbitrary restraint or injurious interference with the normal processes of production. They are intended to benefit and assist the farmer and all those who play a legitimate part in the preparation, distribution, and marketing of foodstuffs.

It is proposed to draw a sharp line of distinction between the normal activities of the Government represented in the Department of Agriculture in reference to food production, conservation, and marketing on the one hand and the emergency activities necessitated by the war in reference to the regulation of food distribution and consumption on the other. All measures intended directly to extend the normal activities of the Department of Agriculture in reference to the production, conservation, and the marketing of farm crops will be administered, as in normal times, through that Department, and the powers asked for over distribution and consumption, over exports, imports, prices, purchase, and requisition of commodities, storing, and the like which may require regulation during the war will be placed in the hands of a commissioner of food administration appointed by the President and directly responsible to him.

The object sought to be served by the legislation asked for are: Full inquiry into the existing available stocks of foodstuffs and into the costs and practices of the various food producing and distributing trades; the prevention of all unwarranted hoarding of every kind and of the control of foodstuffs by persons who are not in any legitimate sense producers, dealers, or traders; the requisitioning when necessary for the public use of food supplies and of the equipment necessary for handling them properly; the licensing of wholesome and legitimate mixtures and milling percentages; and the prohibition of the unnecessary or wasteful use of foods. Authority is asked also to establish prices—but not in order to limit the profits of the farmers, but only to guarantee to them when necessary a minimum price which will insure them a profit where they are asked to attempt new crops, and to secure the consumer against extortion by breaking up corners and attempts at speculation when they occur by fixing temporarily a reasonable price at which middlemen must sell.

I have asked Mr. Herbert Hoover to undertake this all-important task of food administration. He has expressed his willingness to do so on condition that he is to receive no payment for his services and that the whole of the force under him, exclusive of clerical assistance, shall be employed so far as possible upon the same volunteer basis. He has expressed his confidence that this difficult matter of food administration can be successfully accomplished through the voluntary cooperation and direction of legitimate distributors of foodstuffs and with the help of the women of the country.

Although it is absolutely necessary that unquestionable powers shall be placed in my hands in order to insure the success of this administration of the food supplies of the country, I am confident that the exercise of those powers will be necessary only in the few cases where some small and selfish minority proves unwilling to put the Nation's interests above personal advantage and that the whole country will heartily support Mr. Hoover's efforts by supplying the necessary volunteer agencies throughout the country for the intelligent control of food consumption and securing the cooperation of the most capable leaders of the very interests most directly affected, that the exercise of the powers deputed to him will rest very successfully upon the good will and cooperation of the people themselves, and that the ordinary economic machinery of the country will be left substantially undisturbed.

The proposed food administration is intended, of course, only to meet a manifest emergency and to continue only while the war lasts. Since it will be composed for the most part of volunteers, there need be no fear of the possibility of a permanent bureaucracy arising out of it. All control of consumption will disappear when the emergency has passed. It is with that object in view that the administration considers it to be of preeminent importance that the existing associations of producers and distributors of foodstuffs should be mobilized and made use of on a volunteer basis. The successful conduct of the projected food administration by such means will be the finest possible demonstration of the willingness, the ability, and the efficiency of democracy, and of its justified reliance upon the freedom of individual initiative. The last thing that any American could contemplate with equanimity would be the introduction of anything resembling Prussian autocracy into the food control in this country.

It is of vital interest and importance to every man who produces food and to every man who takes part in its distribution that these policies thus liberally administered should succeed and succeed altogether. It is only in that way that we can prove it to be absolutely unnecessary to resort to the rigorous and drastic measures which have proved to be necessary in some of the European countries.

(The Secretary of Agriculture has been of the opinion from the outset that special emergency powers for the regulation of distribution and consumption during the war should be vested in the President, and that these powers should not be exercised by the Department of Agriculture but by an emergency agency. He has also entertained the hope that Mr. Herbert C. Hoover, especially because of his familiarity with international food conditions, might be designated by the President to discharge these powers during the war. He is greatly pleased that the President has concluded the matter and very much hopes that the necessary powers will be quickly conferred by the Congress.)

The quality and flavor of meat or fish can be injured by overcooking or improper cooking. If fats are allowed to burn even a little, they develop unpleasant flavors; if this happens in making gravies and sauces or in frying foods, the food will usually not be eaten. Burned meat is also disagreeable, and so are burned vegetables.

GROW BUCKWHEAT.

Sow on Land Where Other Crops Have Failed—Will Produce Well on Infertile, Poorly Tilled Lands.

Buckwheat should be grown in larger quantity this year in New York, Pennsylvania, Ohio, Michigan, Wisconsin, New England, and in the mountain sections of Maryland, West Virginia, Virginia, Kentucky, North Carolina, and Tennessee, where it is known to be a safe crop. It should be sown on land where other crops have failed and on old meadow and pasture lands where the yields of hay and grass promise to be small. This is the advice given by the United States Department of Agriculture to farmers in all States named, but especially to those in New York and Pennsylvania, where about two-thirds of the buckwheat crop of the country is now grown. In the more northern States, buckwheat can be sown almost anywhere without reference to elevation, but farther south it is best adapted to the uplands and mountainous sections.

Buckwheat should be sown on land prepared as for corn. It is an excellent crop to sow where corn or some other crop has been planted but where a stand has not been secured. Best results are obtained where the land is plowed early and is well prepared, but good results can be obtained by sowing immediately after plowing and harrowing.

Uses of Buckwheat.

Buckwheat is valuable as a human food. It is also an excellent feed for poultry. The middlings remaining as a by-product after milling are, on account of their high protein content, a valuable feed for dairy cows. The production of buckwheat will help to provide food in many districts this year for local consumption and thus help to avoid the danger of shortage due to possible lack of adequate transportation facilities.

Seeding Rate.

Buckwheat should generally be seeded at the rate of 3 or 4 pecks per acre. If the soil is fertile and a drill is used and the seed is of good vitality, as little as 2 pecks may be sufficient. As much as 5 pecks are sometimes sown. It is best to use a grain drill, but this is not essential, as the seed can be broadcasted and harrowed in with satisfactory results. It should be sown from one-fifth of an inch to 2 inches deep, depending on the condition of the soil.

Best Crop for Poor Land.

There is probably no other crop that will produce better on infertile, poorly tilled lands than will buckwheat. It is well suited to light, well-drained soils, such as sandy loams, and to the silt loam soils. It needs but little lime, growing well in acid soils without lime, where alfalfa and red clover would not succeed. When the soil is poor, it is profitable to use fertilizer, but where good wheat or corn crops can be produced without fertilizer, it is unnecessary for the buckwheat crop. On the poorest hill land a small application of nitrogen and phosphorus is advisable, but generally nitrogen is not needed. The plant responds very readily to applications of phosphates, however. Low-grade fertilizers containing phosphorus and a small amount of potassium can be used to advantage on the crop where the land is poor.

Three varieties of buckwheat are commonly grown in the United States, Japanese, Silver Hull, and Common Grey, the first two being most generally used. Japanese has a large dark-colored seed, while the Silver Hull has a smaller seed, glossy or silvery in appearance. These two varieties are of about equal value, when yields are considered.

A Cool-Weather Crop.

Buckwheat is very sensitive to cold and is killed by the first heavy frost. It fills best in cool weather, however, and so the sowings are deferred to allow only time for the crop to mature before frost occurs. Under the most favorable conditions a buckwheat crop will mature in 10 weeks, but the average time is about 12 weeks. When seeded the last week in June or first week in July in New York and Pennsylvania and about a week earlier in Michigan and Wisconsin it is most likely to escape injury from hot weather, which, with drying winds and hot nights, causes the flowers to blast and fail to produce seed. The seeding time for any locality is determined fairly accurately by allowing it a period of 12 weeks for growth before the first killing frost is expected.

The farmer does not need expensive machinery for harvesting the buckwheat crop. An old-fashioned cradle, although it requires hard labor, does the harvesting well. The drop reaper, however, is one of the most satisfactory machines for harvesting. Many farmers use the ordinary binder, which practice is advisable where it can be followed. Cutting is begun as soon as the first lot of blossoms have disappeared, or often just before the first frost is expected. Buckwheat will mature its seed in a few days, if, after cutting, the crop is left in loose bundles where they are dropped from the cradle or reaper. It should then be set up in small shocks and tied near the top with some strands of the straw bent upward from the sides of the shock. The cut buckwheat is usually left in the field in the shocks until threshing time, when it is drawn in and threshed either with the flail or by machinery.

The farmer need generally have no fear of this crop being damaged by either insect enemies or fungous diseases, as the buckwheat plant is but little affected by either of these. It is an excellent crop for destroying weeds and for renovating and putting the soil in fine mellow condition.

SPRAY FOR GRAPE PESTS.

Increase Grape Yield by Spraying for Insects and Diseases, Say Department Specialists.

Grape insect enemies and diseases may be controlled and a good crop of the berries practically assured if a careful spraying schedule is carried out, say A. L. Quaintance of the Bureau of Entomology and C. L. Shear of the Bureau of Plant Industry, of the U. S. Department of Agriculture. Owners of small orchards and vineyards do not sufficiently appreciate the fact, the specialists point out, that by the expenditure of a little time and money a large proportion of the fruit may be saved, repaying many times the trouble involved in its protection.

The principal insect enemies of the grape are the grape berry moth, the grape rootworm, the rose chafer, the grape leaf folder, and the eight-spotted forester, all of which are eating insects; and the grape leaf hopper and the brown grape aphis, sucking insects. The principal diseases which attack grapes are black rot, downy mildew, powdery mildew, and anthracnose.

The use of combination spray solutions containing chemicals which act as insecticides or fungicides is advocated by the specialists. The following spray schedule is recommended:

Spray Schedule.

First application.—About a week before the blossoms open, or when the shoots are 12 to 18 inches long, spray with Bordeaux mixture, 4–3–50, for fungous diseases, adding 2 to 3 pounds of arsenate of lead paste, or one-half that quantity of the powdered form, for flea-beetle, rose chafer, etc.

Second application.—Just after the blossoms fall, spray with the same materials as in the first application for the same fungous diseases and insects and for the grape berry moth, grape leaf folder, and adults of the grape rootworm.

Third application.—About 2 weeks later use Bordeaux mixture 4–3–50, arsenate of lead paste 2 to 3 pounds, 40 per cent nicotine sulphate 1 part to 1,500 parts of the spray mixture, for fungous diseases, berry moth, light spotted forester, grape leaf folder, brown grape aphis, grape rootworm, and grape leaf hopper. To destroy the leaf hopper direct the spray against the lower surface of the leaves. To control the berry moth thoroughly, coat the grape bunches with the spray.

Fourth application.—About 10 days later or when the fruit is nearly grown, if black rot or mildew are still appearing, spray with neutral copper sulphate or verdigris at the rate of 1 pound to 50 gallons of water.

SAVING MAN POWER.

Three Important Ways of Making Farm Labor More Efficient in Field Operations.

Agricultural efficiency, in this national emergency, is in considerable measure a matter of efficiency in the use of farm machinery. Man labor is scarce. The lack must be made up largely by better utilization of men, horses, and tractors now on farms.

There are three important ways in which our more efficient farmers improve on traditional methods of using labor for field operations, namely:

(1) They increase the horsepower per man by increasing the size of teams.

(2) They increase the area covered per man and per team by substituting large-sized implements for smaller ones.

(3) They increase the area covered in a given time by increasing the size of fields.

To increase horsepower per man the farmer merely drives a three-horse team where before he drove but two horses, or a four-horse or five-horse team instead of a three-horse team. This is perhaps the simplest expedient for increasing labor efficiency on the farm, and one which is already very generally practiced by our farmers. Where horse labor is abundant and man labor scarce doubling up teams effects a material saving of labor, even without any increase in the size of implements used, since naturally the large team works more easily and more rapidly than a smaller one.

When the doubling of teams is accompanied by the introduction of larger implements, a further saving of man labor and of time is effected. For example, one man with a two-row cultivator will cultivate twice the crop area per day covered by the man with a one-row cultivator. Thus, too, under favorable conditions, an 8-foot mower or binder will cover much more ground in a day than will a 6-foot machine. Similar economies may be effected with other machines, such as harrows, sulky plows, hay-rakes, and the like, especially in the Eastern States, where small-sized implements are the rule. In general, the larger sized machines cost but little more than the smaller ones; indeed the difference is usually so small that one season's saving in man labor through the use of a big machine will often pay the excess in its cost over that of one of a smaller size. The farmer should always buy the largest implement that will be practical on his land. It is false economy to buy a smaller one.

Resort to the third expedient for increasing labor efficiency in field operations, namely, enlarging fields, depends in great measure on the lay of the land. Where the land is level or rolling and two adjoining fields to be plowed can be plowed as one if a fence between is removed, it is often worth while to tear away the fence and throw the two fields into one. Thus the straightaway reaches in plowing and other operations are lengthened and much of the time is saved that otherwise would be lost in turning. Incidentally, this procedure brings under cultivation the waste land in the fence row.

Farm-management studies have shown that the size of farm is a controlling factor as regards efficiency in the use of man labor, horse labor, and machinery on farms. That is to say, other things being equal, the larger the farm the more crop acres worked per man. It is not possible, of course, for the average farmer to increase the size of his farm at will to meet an emergency, but many will find it possible to gain at once a measure of the advantage of a large farm by making their fields as large and as few in number as is possible under the conditions of topography and rotation.

For the tractor owner there are certain special expedients that may be resorted to in this crisis. If work offers and proficient operators are available for two shifts, he should work his outfit 24 hours a day. The tractor that works all night as well as all day is the equivalent of two such tractors working 12 hours. The average tractor owner is in position to render effective aid in the production campaign by helping those of his neighbors who may be behindhand with their spring work, and in many instances, no doubt, a week of night work by a tractor will go far toward solving the immediate labor problem of a neighborhood. At any rate it is the obvious duty of the tractor owner to do all the custom work he can do this spring without neglecting his own work.

It should be borne in mind in this connection that experience has shown that in working exceptionally long hours with tractors it is generally the best practice to have one man in full charge of the outfit and responsible for all adjustments and repairs.

HAY FOR THE SOUTH.

Sorghums, Millets, and Cowpeas the Best Forage Crops for Southern Farmer.

In the Southeastern States the sweet sorghums, Sudan grass, millets, and cowpeas are the forage crops best suited for summer planting. The transportation problem, under present conditions, promises to be a highly important one. It is very desirable for this reason that farmers in the Southeastern States should grow sufficient hay to feed their work stock and other farm animals instead of importing it from other sections of the country. By doing this, the United States Department of Agriculture states they will relieve the pressure on transportation agencies and release large quantities of marketable hay for the use of the Army.

The forage crops named succeed even on the moderately fertile lands of the South.

It is not necessary, however, for the cotton farmer to reduce his acreage in cotton to insure himself of an abundance of hay for his own live stock. Usually there is a large amount of untilled land in the South, and if this were utilized in the production of forage there would be an abundance of hay to supply all home requirements.

One feature to be considered if southern farmers are to produce their own hay is the cost and scarcity of seed for planting. In particular the price of Sudan grass seed is so high that it practically prohibits the seeding of this crop for hay purposes. To a certain extent this is true also of the cowpea. On the other hand, seed of millets and the sorghums can be obtained at a much more reasonable price. These, therefore, are recommended as the most satisfactory crops for providing hay for home consumption in the Southeast.

In order to conserve the seed supply of sweet sorghums, it is advised that the practice of seeding these sorghums broadcast or in close drills be discontinued very largely for the present. Sixty pounds of seed per acre are required where these crops are drilled or broadcasted, and only 5 pounds if planted in rows and cultivated. This latter method requires more labor, but the yield per acre of fodder will equal or exceed the yield of hay from broadcast or drilled seedings, and a much larger acreage can be planted with the same amount of seed.

TO THE PRODUCE TRADE.

In response to an inquiry, the Secretary of Agriculture on May 16 made the following reply:

"There is no desire on the part of any branch of the Government to do anything else than to promote the best interests of all the people of the Nation in the present emergency. The desire is to disturb helpful, legitimate, industrial activities just as little as possible. The Congress has been asked to vest in the President certain emergency powers, to be in existence only during the course of the war. It seems essential to the national safety that these powers be given to the President. It is not improbable that some of them will not have to be exercised, but the Government ought not to be without the requisite authority. The Government realizes the constructive and patriotic service which can be rendered by the produce trade and will endeavor to assist, as far as possible, members of the trade who wish to do their share."

Sheep sorrel can not be entirely exterminated by mowing, but it can be greatly weakened. The weed should be mown as soon as the flowering stalks have attained full size, but before they have commenced to turn red.

SWEET-POTATO STORAGE.

One-fifth of the Crop Is Lost Annually Through Lack of Proper Storage Facilities.

One-fifth of the sweet-potato crop of the Southern States—10,000,000 bushels of the average crop of 50,000,000—is lost annually by decay. Careless handling at harvest time and improper storage cause almost the entire loss. To save these 10,000,000 bushels to the food supply this year and also take care of the probable increase in production is the object of efforts specialists of the United States Department of Agriculture are making to induce growers in the South to prepare well-ordered storage houses as soon as possible for the coming harvest.

Storage can be provided by converting vacant buildings into storage houses, or in specially constructed buildings. Two things are essential in the storeroom—good insulation and provision for thorough ventilation. These things are provided for in plans for a model storage house given in Farmers' Bulletin 548, "Storing and Marketing Sweet Potatoes." The plans there described are for a building of 2,500 to 3,000 bushels capacity, but the principles of construction can be as readily followed and applied in providing storage for 500 bushels or for 50,000 bushels.

It is economy to build a substantial sweet-potato storage house, because it will last longer and require less attention than a cheap, poorly constructed one. It would be possible to keep sweet potatoes in a cheaper and less carefully constructed house, but the attention required and the additional fuel used would soon exceed the cost of the extra care and material required in a better one. The chances of loss are much greater in a poorly built than in a well-built house.

Construction of Sweet-Potato Storage House.

Storage houses may be built of wood, brick, cement, or stone. Wooden houses are preferable because they are cheaper and easier to keep dry. It is difficult to keep moisture from collecting on the walls of a cement, stone, or brick house. The house should be built on posts or piers, so as to allow a circulation of air under it. The "dugout," or a house built partly under ground, fails because it is practically impossible to keep this type of house dry, and moisture in the storage house will cause the potatoes to rot. The sills should be placed on posts or pillars 12 to 15 inches from the ground, or just high enough so that a wagon bed will be on a level with the floor of the house.

On many farms in the South there are buildings, such as abandoned tenant houses, that could be converted into sweet-potato storage houses at very little expense. Where there are such buildings they should be used rather than to build a new house. These houses will usually need to be ceiled on the inside. For this purpose 2 by 4 inch scantlings should be set against the wall and covered first with building paper and then a layer of matched lumber. The windows and doors should be made tight and ventilators put in where needed. The bulletin already mentioned describes how the bins may be made.

SERVICE FOR FARM BOYS.

Boy Who Joins a Pig Club Publicly Enlists as a Junior "Soldier of the Commissary."

The farm herd of swine offers a splendid opportunity for farm boys to help their country. Too young to enlist in the Army or Navy, too small to stand up under the hard work of a farm hand, they can help to win the war by taking over responsibility for lighter work, and so relieve men for the harder work. By taking charge of the hogs on the farms boys will be helping to solve the farm-labor problem. They will be helping to produce a very important food for the men in the Army and Navy.

Boys taking charge of the farm herd should join a pig club. Pig-club members have already proved their ability as hog raisers. They can extend their work. A member of the pig club receives valuable instructions from trained and experienced leaders. A pig-club member publicly enlists as a junior "soldier of the commissary." Fathers will have more faith in their boys if they are pig-club members, and will be readier to make them partners and put them in charge of the farm herd. A pig-club boy means business. He keeps records and knows just what it costs to produce a pound of pork. Records help to correct mistakes. They make raising hogs a business proposition.

A boy can do much with the farm herd. Very little work will be needed that he can not do. With such careful attention as a boy gives, the pigs thrive better. Sanitation is improved and diseases lessened. The instructions to pig-club members are valuable and practical and help to produce more profits. Boys wishing to join a pig club and take charge of the farm herd should see the county agents, or write to their State colleges of agriculture, or the United States Department of Agriculture.

The production of persimmons in Japan for the year 1914 totaled 321,690,762 pounds of fresh fruit and 30,650,701 pounds dried.

MEAT MARKETS IN SOUTH

Ways by Which the Small Producer May Profitably Dispose of His Live Stock.

Better marketing facilities are essential to the increase in live-stock production in the South, which is desirable from every point of view. Various methods of improving the present situation in this respect have been tried out, and the most promising ones are discussed in a new publication of the United States Department of Agriculture, Farmers' Bulletin 809. Among the most important are the organization of cooperative shipping and marketing clubs and of local live-stock buying companies, the establishment of local packing houses, the custom of holding live-stock sales on advertised dates, and the use of local ice plants in curing farm meat.

Of these, says the bulletin already mentioned, cooperative shipping is the one that is being most generally adopted in the United States. Associations for this purpose have met with marked success in the Middle West and are equally well adapted to conditions in some parts of the South. They enable the small producer to ship his animals to centralized live-stock markets at no greater cost for transportation than is paid by the dealer who ships in carload lots. In this way the farmer is made independent of local buyers. Another great advantage of such associations is that they are simple in organization and require no capital to do business, because the farmers are not paid for their stock until the returns from the shipment are received.

In one Mississippi city the board of trade has created a somewhat more complex organization in order to provide the farmers of the surrounding country with a good local market for their live stock throughout the year. A "Farmers' Stockyards Co." has been organized with a paid-in capital of $2,500, provided by local business men, in the hope of increasing the production of live stock in the section. No dividends are paid and the operating expenses of the company are reduced to a minimum. On two days of each week throughout the year the company buys live stock for cash in any sized lots, at prices which are the equivalent of those prevailing at the large centralized markets less the cost of sending the animals to these markets. The immediate result of this movement, it is said, has been higher prices paid by local butchers and their willingness to pay cash for live stock instead of insisting that payment be made by extending credit to the producer. Incidentally the operations of the company have shown that live stock can be bought and shipped to the large markets, and a number of private dealers have undertaken to com-

pete with the company. This has stimulated live-stock production in the surrounding country.

Another plan adopted by the Clemson Agricultural College in South Carolina and the United States Department of Agriculture, which has been cooperating with the college in the encouragement of live-stock production, is the establishment of set market days at places accessible to the farmers feeding cattle. When this plan was first instituted arrangements were made to bring to the sales buyers from northern markets. The results have proved very satisfactory, cattle frequently netting from one-half to one cent more per pound than local buyers offer.

These and similar methods are designed to afford the farmer easy access to the large outside markets. Without them he is practically dependent on the local butcher and the local dealer or shipper. In selling to the butcher, frequently little or no attention is paid to market conditions. Hogs and cattle are slaughtered on numerous farms when the weather turns cool, with the result that the market is glutted. This means low prices, which the farmer must accept because the product is perishable. In a small town in Louisiana, for example, it was found that each time it grew cool eight or ten dressed hogs were offered for sale when the demand called for no more than one or two.

Home Curing of Meat Practicable.

To some extent a remedy for this situation may be found in better methods of curing meat at home and also by taking advantage of the refrigeration facilities afforded by local ice plants. Experience has shown that it is practicable for the average southern farmer to cure the pork needed for immediate home use, and the possibility of marketing hogs in the form of cured meats is worthy of consideration. Some form of refrigeration, however, will greatly aid in safeguarding the curing process. This may be supplied either in private meat-curing houses or in a community meat-curing house, or by taking the meat to a local ice plant to be cured. A recent experiment has shown that in a small meat-curing house in southern Georgia the cost of curing the meat was not more than three-fourths of a cent a pound, including the cost of the ice. On the other hand, a number of ice companies curing meat for farmers charge 1 cent a pound for curing, 2 cents for curing and smoking, and 3 cents for curing, smoking, and wrapping. Some ice plants prefer to buy the hogs outright from the farmer and sell the cured products on their own account. A noticeable effect of this practice is to increase the number of hogs produced, because of the comparative certainty that a fairly profitable market will be found for them.

VALUE OF WINDBREAKS.

They Reduce Evaporation, Hinder the Blowing of Top Soil, and Prevent Physical Damage.

That the farm windbreak will more than pay for the use of the land it occupies and saps by increased returns from the sheltered crops and by the value of the wood produced is indicated by studies made by specialists of the Forest Service of the United States Department of Agriculture. The results of these studies are reported in a recent publication of the department, Farmers' Bulletin No. 788, The Windbreak as a Farm Asset.

The value of a windbreak is measured by its impenetrability. Ordinarily it does not provide an absolute barrier to the wind, but only greatly reduces the velocity of the air currents. To increase the effectiveness of the breaks several rows of low-growing trees and shrubs often are planted parallel to the main planting. Windbreaks serve useful purposes both when used to protect growing crops and farm buildings.

A Protection to Crops.

When used as a protection for growing crops windbreaks reduce evaporation, hinder the movement of top soil, and prevent physical injury to the crops. They also operate to bring about a higher temperature in the protected area during the day, an effect due largely to the reduction of evaporation. Of these functions, the saving of moisture is the most important, since anything which helps to make additional moisture available to crops is, under normal conditions, a direct benefit to the farmer.

Windbreaks also tend, however, to affect crops adversely to a certain extent. The roots of the trees spread under the nearest plants of the adjoining crops and sap from them moisture and plant food. By shading the ground the breaks also may prevent the crops in the shaded area from developing properly. Whether the total effect of the windbreak is good or bad depends upon whether the benefits derived from its influence on wind movement, temperature, and evaporation are greater or less than the injury resulting from the sapping and shading of the ground near by.

Taking all these factors into consideration, the specialists of the department have reached the conclusion from their studies that with ordinary field crops the farmer may count on a benefit from windbreak protection which will make the loss of the area occupied by the trees negligible. Under Middle Western conditions a windbreak whose width does not exceed two or three times its height will more than pay for itself, regardless of the timber which it may produce. Farther east the same kind of influence and benefit will exist, though in a less marked degree, and a greater direct return may be expected from growing the timber for its own value, so that the need of even a slight amount of protection should make windbreak planting attractive. The saving with corn was especially marked, the investigators found.

About farm homes the principal function of windbreaks is to promote the comfort of the farm family. By cutting off the unrestricted sweep of winter winds the breaks make the heating of the buildings easier and therefore less expensive.

Planting Windbreaks.

In any region the windbreak should be so laid out as to offer the greatest resistance to damaging winds and to protect the greatest area. This simply means having the belt or row at right angles to the prevailing winds. The kind of trees to plant should be determined by the moisture and other climatic conditions. Under the respective conditions favoring their growth the following varieties of trees or shrubs have been found useful in the construction of windbreaks: Cottonwood, mulberry, Osage orange, green ash, locust, Scotch and Norway pine, Colorado blue spruce, Black Hills spruce, white pine, sagebrush, Piñon, alligator juniper, cedars, Monterey cypress, Monterey pine, eucalyptus, Carolina and Lombardy poplar, and willows.

In designing the windbreak, the width of the strip of ground to be allowed the windbreak may be figured at from one and one-fourth to twice the height of the trees; for instance, a single row of trees 50 feet high should be allowed a strip of ground from 62 to 100 feet wide.

In addition to the saving resulting from protecting crops, farmers may count normally on a considerable direct return from windbreaks in the surplus wood available for construction purposes and fuel. The annual growth may be figured as worth from about $1 to $30 per acre per year, depending on the kind of timber grown and the climatic and soil conditions.

NEW FARMERS' BULLETINS.

The Windbreak as a Farm Asset. (No. 788.)

Aphids Injurious to Orchard Fruits, Currant, Gooseberry, and Grape. (No. 804.)

Bread and Bread Making in the Home. (No. 807.)

The soy bean may be grown throughout the humid and semihumid sections of the South and in the southern portion of the corn belt. It is a very valuable forage crop and promises to be very useful in many boll-weevil regions as a cash crop, and a source of oil seed for the oil mills.

HOW TO CAN IN SOUTH.

Home Methods as Taught by the U. S. Department of Agriculture in the Southern States.

It is more important than ever this year that none of the surplus products of the garden should go to waste. The country needs food now and it will need food next winter, not only for itself but for the allies. Home-canned products may never leave the house in which they are made, but their consumption at home will mean so much more food available elsewhere for those who need it. It is imperative also that the canning be done carefully as well as energetically in order to preserve the more perishable products.

In the method taught by the specialists in the United States Department of Agriculture to the members of the canning clubs in the South, the first step is to see that all the necessary preparations are made before the vegetables or fruit are picked. "One hour from the field to the can" is a motto that every canner should have in mind. This is impossible if one has to prepare utensils and wash and scald cans after the fruits and vegetables have been brought into the house. The condition of these is a prime factor in determining the quality of the finished product. Unless they are absolutely fresh, crisp, and clean when they are put into the cans, a high-grade article is impossible.

Preparing the Product for the Can.

In case of tomatoes the fruits should first be graded and all defective ones rejected. They should be lowered into boiling water for one minute; then plunged into cold water and peeled promptly. A slender, pointed knife should be used to cut out the core, care being taken not to cut into the seed cells.

The next step for nearly all fruits and vegetables is blanching. This consists of plunging the product into boiling water in which it is allowed to remain for a time that varies with the state of maturity. Blanching gives a more thorough cleaning than ordinary washing, removes the strong odor and flavor from certain kinds of vegetables, improves the texture, insures a clearer liquor, shrinks the article and makes it more flexible, and in this way facilitates the putting up of a full pack. A wire basket or cheesecloth square should be used for the purpose. After blanching, spraying fruit with cold water will make it firmer and it is also sometimes desirable to put vegetables into cold water for an instant in order to make them crisper.

Can Surplus Food, But Use Jars and Cans Wisely.

Don't have an empty preserving jar in your home next fall.

Reserve regular tight-sealing containers for canning foods.

Concentrate products so that each jar or can will hold as much food and as little water as possible.

Put up jams, jellies, and preserves in wide-necked glasses sealed with cork or paper and paraffin. Pack fruit juices in ordinary bottles.

Don't can anything that can be kept just as well dried or in other forms. Dry navy and mature Lima beans for winter use.

Produce in your garden lots of cabbage, potatoes, and root crops that can be kept for winter without canning.—United States Department of Agriculture.

Legal Requirements for Selling Canned Goods.

Since the Federal laws governing the interstate shipment of food require cans to be filled as full of food as is practicable for processing, and to contain only enough liquor to fill the spaces and cover the contents, it is necessary to see that all the cans are filled to a maximum capacity. A number of containers should be weighed before and after filling in order that an accurate idea of the average net weight—in other words, the weight of the contents exclusive of the can—may be obtained. It should also be remembered that corn expands in processing to such an extent that containers filled with it can not be packed as full as with other vegetables. The cans should be marked with a pencil or knife to show the contents. The necessity for this work should be foreseen so that there may be no delay and that the filled cans do not stand for any length of time before the air is exhausted from them.

Canning Process.

After the fruit or vegetable is in the can, brine, sirup, or water should be added to within one-fourth of an inch of the top and the can shaken gently to displace all air within it. The groove around the opening is then cleaned and wiped and the cap slipped on. In order to make sure that the contents of the can have the required weight, the container should be weighed carefully before sealing.

If the weight is satisfactory, flux should be applied carefully around the groove with a small brush or cord, or a little mop made

Canning vegetables (hot-water process).

[Do not attempt to use this table without reading all directions carefully.]

Vegetables.	Blanch, minutes.	Liquor.	In tin.			In glass.	
			No. of can.	Exhaust, minutes.	Process.	Jar.	Process.
Asparagus	3 to 4	Brine (heavy)	2	3	Intermittent or 2 hours	Pint	Intermittent, or 2 hours continuous.
String beans	3 to 8	Brine	2	3	Intermittent	do	Do.
Do		do	3	5	do	Quart	Intermittent.
Lima beans	2 to 5	Salt, sugar, water	2	3	do	do	Do.
Beets	Cook three-fourths done, peel	Brine	2	3	1 to 2 hours	do	1½ to 2 hours.
Carrots	Cook three-fourths done, scrape	do	2	3	1 hour	do	1 hour.
Corn	1 to 3 (blanch on cob)	Salt, sugar, water	2	10	Intermittent	do	Intermittent.
Okra	10 to 15	Brine	2	3	do	Pint and quart.	Do.
Peas (very young)	1 to 3	Salt, sugar, water	2	3	45 minutes first day, 35 minutes second and third days.	Pint	Same as No. 2.
Peas, medium	3 to 8	do	2	3	Intermittent	do	Intermittent.
Potato, sweet	Cook three-fourths done, peel	Pack dry	3	15	3 hours	Quart	3 hours.
Rhubarb		Cold water	2	2	15 minutes	do	15 minutes.
Soup mixture		Salt, sugar	2	5	2 hours, or intermittent	do	2 hours, or intermittent.
Tomato		do	2	2	20 minutes	Pint	15 minutes.
Do		do	3	3	30 minutes	Quart	30 minutes.

NOTE.—String beans packed in No. 2 cans are preferable because more surely sterilized.

Corn, Lima beans, and peas should never be packed in larger container than No. 2, and processed always intermittently. Corn is cut from cob after blanching.

Beets and rhubarb when packed in tin must be put in enamel-lined cans.

Soup mixture containing corn and lima beans should always be processed intermittently.

The brine used is made of 2½ ounces salt to 1 gallon of water, except for asparagus, which contains 4 ounces to 1 gallon.

by tying a piece of clean white cloth around the end of a small stick. Great care must be taken to see that none of the flux enters the can. The clean, hot capping steel is then applied, the cap being held in place with the center rod. As the steel is lowered it should be turned steadily until the solder flows. Hold the rod firmly and lift the steel with a sudden twist to swing the melted solder evenly around the groove.

EXHAUSTING AND STERILIZING.

The next step is to exhaust the air from the cans. To do this they should be placed in trays and lowered into boiling water to within 1 inch of the top. Ordinarily 3 minutes is long enough for the cans to remain in the water, which need not be brought again to the boiling point before the cans are taken out. A temperature of 180° F. is frequently sufficient for exhausting. Failure to exhaust results in the air which is left in the can expanding. This causes the can to bulge and gives the appearance of a "swell," which will not only prevent the sale of that can but prejudices customers in future. The leaders in the government canning work insist that wherever the "4-H Brand" label is used, exhausting shall be done.

After exhausting, the small hole in the top of the can must be closed immediately. To do this apply flux as for capping and use a little wire solder to close the hole. Hold the solder with the left hand near the hole and barely touch the hot copper to it, so that only a bead will drop.

It now remains to sterilize the contents of the sealed cans. For beans, corn, peas, and asparagus intermittent processing is recommended. Under this method sterilization is carried on for one hour for three successive days. The cans are lowered slowly under water that is boiling vigorously at the time. Naturally it ceases to boil as soon as the cans are immersed, but will begin to boil again a short time later. The time of processing is counted from the moment when the water begins to boil again and it must be kept boiling constantly throughout the entire hour. In the case of very young string beans and some other easily sterilized vegetables, the processing is reduced to one hour for two successive days.

As soon as the processing is over, the cans should be cooled as rapidly as possible in order to stop cooking, which breaks down the fruit and injures the flavor and color. It is well to plunge the cans into very cold water. They should never be stacked close together until they are entirely cold.

The labeling should be done with a rather dry paste which is put only on the end of the label so that it does not touch the tin. Paste may cause rust, and in damp climates it is sometimes customary to lacquer the outside of the can before it is labeled. The label, if the product is intended for sale, must contain the net weight in pounds and ounces and the packer's name and address.

In packing fruits and vegetables it is necessary to surround them with brine, sirup, or water, but under the terms of the Federal law governing the interstate shipment of canned goods no more of this liquor is allowed than is actually necessary to cover the contents after as full a pack as possible is made. With tomatoes no water whatever should be added and no tomato juice should be added in excess of the amount in the tomatoes canned.

Canning fruits (hot-water process).

Fruit.	Blanch.	Sirup.	In tin.			In glass.	
			Number of can.	Exhaust, minutes.	Process, minutes.	Jar.	Process, minutes.
Apples	1 minute	No. 1	3	2	8	Quart	12
Berries		No. 3	2	2	10	do	10
Cherries, sweet	15 seconds	No. 3	2	2	20	do	25
Cherries, sour	do	No. 4	2	2	20	do	25
Currants		No. 3	2	2	15	do	15
Figs	Soda blanch	No. 3	2	2	25	do	30
Gooseberries		No. 3	2	2	15	do	20
Guava	15 seconds	No. 4	2	3	20	do	35
Do	do		3	3	25	Pint	25
May haw		No. 3	2	2	20	Quart	25
Peaches	15 seconds	No. 4	3	3	15	do	20
Pears	do	No. 3	3	3	20	do	25
Plums	Prick with needle	No. 4	2	2	12	do	15

NOTE.—Berries, cherries, currants, figs, gooseberries, May haws, and plums when packed in tin must be put in enamel-lined cans.

To make the sirups recommended, boil sugar and water together in the proportion given below until sugar is dissolved. Strain all impurities out of the sirup before using:

Sirup No. 1, use 14 ounces to 1 gallon water.

Sirup No. 2, use 1 pound 14 ounces to 1 gallon water.

Sirup No. 3, use 3 pounds 9 ounces to 1 gallon water.

Sirup No. 4, use 5 pounds 8 ounces to 1 gallon water.

Sirup No. 5, use 6 pounds 13 ounces to 1 gallon water.

The sirup for canned berries is made out of berry juice instead of water.

ADD SUGAR AND SALT.

In addition to the liquor a mixture of sugar and salt adds greatly to the flavor of such products as tomatoes, peas, Lima beans, and corn. The mixture recommended by the Government specialists in canning is composed of one-third salt and two-thirds sugar. Two level teaspoonfuls of this are placed in a No. 3 can and one teaspoonful in a No. 2 can. For beans, okra, cauliflower, etc., a brine containing 2½ ounces of salt to a gallon of water is used. For asparagus a heavier brine, 4 ounces to a gallon of water, is needed.

In order to conserve the supply of tin cans it is strongly urged that all products intended for home use should be put up, whenever possible, in glass. The hermetic type of jar, however, is not a suitable one for intermittent processing, for which the best type is a glass-top jar with wire clamps. The clamps should be raised at the beginning of each processing to allow for expansion.

The accompanying tables show the length of time, the character of the liquor, and other facts in regard to the canning of vegetables and fruits by this hot-water process.

AS TO NITRATES.

In response to an inquiry, the Secretary of Agriculture on May 15 sent the following telegram:

"Am not opposed to the importation of nitrate or the use of nitrate if it could be secured at a price which would justify investment. Impossible to secure nitrate now from Chile for application this season. Government could spare only 4,000 tons. This has cost, except in one instance, $60 a ton at seaboard. Quantity too small to be of consequence. Do not know of private supplies that could be secured and, if so, rates quoted $76 per ton seaboard. Transportation to farmers would increase this. Rates from private concerns include $47 per ton in Chile, same as Government price, and transportation in private ships at abnormal rates for tonnage, insurance, and wages because of conditions. Government can not now use transports and at present could get private ships only at high rates. Have expressed doubt as to wisdom of average farmer investing in nitrate at prices at which it could be obtained, namely, $75 to $80 per ton. Experts doubt whether in such circumstances nitrate could be used profitably except by very skillful farmers."

The sane standard, "Eat enough food and no more," rigidly followed, would reduce greatly food bills in many homes and at the same time tend to improve the physical condition of all members of the household.

WHEATLESS MEALS.

Corn Meal as a Wheat Substitute—High Nutritive Value Justifies More General Use.

"Begin to-day to eat more corn meal and hominy grits in place of wheat flour and wheat breakfast foods" is the message the United States Department of Agriculture is sending out broadcast to housewives. "Try a wheatless breakfast to-morrow, and then extend the wheatless idea to other days or meals," the dietary specialists suggest.

To help the public use corn meal as a wheat substitute, the department has ordered large editions of Farmers' Bulletin 565, "Corn Meal As a Food and Ways of Using It," which will be sent on request to all who apply for it. This bulletin shows that corn-meal dishes can be made to take the place of those made of wheat, and supplies more than 50 tested recipes for its use for breakfast, luncheon, and dinner.

Corn, a great natural breadstuff of this country, the department's specialists point out, has not been used for human food nearly as much as its valuable nutritive qualities warrant. This is due largely to the fact that many persons with a wheat-using habit never have taken the pains to learn to use corn. There is no important dietetic difference between corn and wheat as sources of body fuel. Bread is convenient as a source of starch and protein, but in the ordinary mixed diet it makes little difference whether one gets the required cereal ration in the form of raised or light bread, mixed bread or biscuits, or as mush, hominy grits, or desserts.

To those who wish to try wheatless meals, the department suggests the following:

For a Wheatless Breakfast or Dinner.

As a substitute for wheat breakfast foods, try white or yellow corn meal or hominy grits, served with cream and sugar, butter, sirup, or fresh or dried fruit.

As a substitute for wheat biscuits, rolls, or toast, the housewife can employ a dozen different forms of corn bread, such as hoe cake, dodgers, soft or spoon corn bread, hominy bread, corn meal and rye Boston brown bread, Zuñi Indian bread, etc.

Fried corn-meal mush, fried hominy, or corn-meal pancakes, made with very little wheat flour, will be found a pleasing variation from wheat cakes.

Corn-meal codfish cakes, corn-meal scrapple, corn-meal croquettes, corn meal or hominy cooked with meat, fish, cheese, eggs, or milk, will supply nourishing dishes for the hearty courses.

Hominy grits and coarse hominy (sometimes called samp) may be boiled and used like macaroni or other wheat pastes to serve as side dishes with meat.

For dessert, Indian pudding, corn-meal and fig or apple pudding, apple dumplings, corn-meal doughnuts, gingerbread, cake, fruit gems, etc., will contribute variety as well as nourishment to the bill of fare.

The housewife who wishes to substitute corn for some but not all of the wheat flour can make excellent raised or light bread, pancakes, waffles, muffins, rolls, graham-flour Indian bread, etc.

That wheat, rice, rye, oats, corn, and potatoes are largely interchangeable as sources of starch in the diet, is made clear in Farmers' Bulletin 808, "How to Select Foods: What the Body Needs."

"Many a Mickle Makes a Muckle."

A PAT OF BUTTER.

One pat or serving of butter is a little thing—there are about 64 of them in a pound.

In many households the butter left on the plates probably would equal one pat, or one-fourth of an ounce, daily—scraped off into the garbage pail or washed off in the dish pan.

But if every one of our 20,000,000 households should waste one-fourth of an ounce of butter daily, on the average, it would mean 312,500 pounds a day—114,062,500 pounds a year.

To make this butter would take 265,261,560 gallons of milk—or the product of over half a million cows.

But butter isn't eaten or wasted in every home, some one objects. Very well. Say only 1 in 100 homes wastes even a pat of butter a day—over 1,000,000 pounds wasted. Still intolerable when butter is so valuable a food and every bit of butter left on a plate is so useful in cookery.

The United States Department of Agriculture, Washington, D. C., or your State agricultural college will tell you how to use every bit of butter in cookery.

CHICKEN FAT VALUABLE.

Do you throw away the body fat of poultry—big layers of clean, sweet, yellow fat around the gizzard and found elsewhere around the intestines of the chicken? If you do, say specialists of the United States Department of Agriculture, you are throwing away fat which French housewives consider the finest of fats for making cakes and especially puff paste. In certain seasons in New York and other big cities this fat is so highly esteemed that it brings as much as $1.10 per pound. So great is the demand for this fat that many people make a business of collecting it from butchers and others who dress poultry before delivering it to customers. Housewives would do well to insist on having it delivered if they buy their poultry dressed. By using chicken fat in cooking they can cut down the amount of fat they must buy for that purpose. To prepare it, try it out in a double boiler or other vessel set in hot water until the fat just melts away from the tissues and can be poured off. This fat becomes rancid easily and should be kept cool and covered like butter, and used in a very few days. Chicken fat, like goose fat, may be used for shortening in cakes, such as spice cake, where the seasoning used will mask any flavor which the fat might have. It can also be used for frying the chicken itself or other meats and for warming vegetables, etc.

FIXING OF FOOD PRICES.

Secretary of Agriculture Issues Statement Regarding Control of Prices of Food Products.

In response to a letter regarding the fixing of prices of food products, the Secretary of Agriculture to-day, May 16, sent the following reply:

"Your letter of May 1, with inclosure, has been brought to my attention. Your correspondent expresses apprehension from the talk in the newspapers about the Government setting a price on foodstuffs. He seems to think that it is contemplated to fix a price to producers which would be so low that they could not secure a reasonable return. Of course there has been much confused writing in the papers. Only two suggestions have been made: One is that the Government be given power to fix a minimum price with a view to stimulate production. This price would be sufficiently high to insure producers against loss. It could not have the effect feared by your correspondent, because the very object would be to stimulate production by assuring sufficiently high prices to producers. The other suggestion is that the Government be given power to fix a maximum price, in extreme emergencies, to break corners or to control extortion. It is not contemplated that the Government, if it had the power to fix a maximum price, would announce the existence of such a price in reference to any one or more commodities in advance of the appearance of an acute situation; nor is it contemplated that such a price, if fixed, would be of continuing operation. The single thought in this connection is that the power might be used as a club, to be applied only in individual cases where it is clear that an individual or corporation had established a corner or was practicing extortion. The power, it is suggested, would be used against such individuals or corporations, and when that particular situation was controlled or the abuse eliminated, the incident would be closed. Any further exercise of the power would depend upon the appearance of a similar condition."

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JUNE 6, 1917. No. 44

REVISED FOOD-CONTROL BILL INTRODUCED.

Vests Power in President to Effect Government Control of Necessaries During the War—Prevention of Hoarding—Regulation of Practices on Exchanges—Price Fixing.

Chairman Lever, of the Committee on Agriculture, House of Representatives, on May 22 introduced a revision of the food-control bill (H. R. 4125), upon which hearings have been held by his committee during the past 10 days. The new bill is designated H. R. 4630.

The bill deals with necessaries of life, including foods, feeds, shoes, clothing, fuel, and articles required for their production, and is strictly a war emergency measure. It provides for Government control during the war of necessaries and declares every business dealing with them to be affected with a public interest.

Powers Vested in the President.

The revised bill deals practically exclusively with emergency powers to be vested in the President for the duration of the war. All the powers proposed under all the sections, except perhaps the section dealing with market grades and standards, doubtless will be exercised, by direction of the President, through an emergency agency which the President is authorized by the bill to create. The President is empowered to coordinate all instrumentalities so as to insure promptness, harmony, and economy in carrying out the purposes of the legislation. While the powers are sweeping, they are flexible and to be used only when the President finds that specifically described conditions have arisen requiring their exercise. In every instance in which the bill itself does not expressly define the requirements affecting private conduct the President must prescribe these with preciseness and certainty. When property is authorized to be taken by the Government just compensation is provided for.

The measure is based on the war powers of Congress. Therefore it operates throughout the country, irrespective of State lines. It is believed that each provision is constitutional. Indeed, Congress is authorized by the Constitution to go much farther if occasion should require. Every safeguard in the Bill of Rights has been observed. No constitutional guaranty is invaded.

The chief aims of the bill are to facilitate and clear the channels of distribution, prevent hoarding, assure fair prices, restrain injurious speculation, prohibit evil practices on exchanges, and protect the public against corners and extortion.

The revised bill differs from the former bill particularly in expressly defining "hoarding." Within the meaning of the act, necessaries will be deemed to be hoarded (1) when held, or contracted or arranged for, by any person in a quantity in excess of his reasonable requirements for use or consumption by himself and dependents for a reasonable time; or (2) when held, or contracted or arranged for, by any manufacturer, wholesaler, retailer, or other dealer in a quantity in excess of the reasonable requirements of his business for use or sale by him for a reasonable time; or (3) when withheld from the market for the purpose of increasing or diminishing the price; but, following the precedent of the Canadian law, farmers, gardeners, and others are exempted so far as relates to the products of land cultivated by them.

Standards for grades of foods, feeds, and seeds may be established and enforced, and the labeling of such commodities may be subjected to regulation. The manufacture, storage, and distribution of foods, food materials, and feeds may be required to be licensed and subjected to Government control when essential to prevent uneconomical manufacture or inequitable distribution. Licensees may be required to put hoarded stocks on the market and to refrain from unjust practices and charges.

The disposition of food in storage, in transit, or held for sale, which is about to go out of condition, may be directed so as to prevent its spoilage, and when essential to prevent gluts or to effect equitable apportionment of perishable products among markets, their market movement or distribution may be controlled.

Holders of hoarded necessaries may be compelled to disgorge and put them on the market. Authority is given to procure necessaries by purchase or otherwise, to store them, and to dispose of them at cost. Any factory, mine, or other plant, in which food or fuel may be produced or mined may be requisitioned and operated by the Government.

Price Fixing.

In order to eliminate evil practices on exchanges in which necessaries are dealt in they may be regulated and, if need be, closed. If it becomes essential to stimulate production of necessaries within the United States, a guaranteed price may be fixed by the President which domestic producers, who act in reliance upon the guaranty, will be entitled to receive. The bill contains an anti-dumping clause, in order to prevent flooding the American market with excessive importations which might defeat the practical operation of the guaranty. If essential, a duty, the amount of which will be ascertained by the President, is levied on such importations. In case of extreme emergency, in order to break corners or to prevent extortion, the President may ascertain and prescribe the highest price at which it is reasonable to deal in any particular necessaries. If such a price be fixed, it will thereafter be unlawful for anybody, except one dealing with the products of land cultivated by himself, to sell at a higher price.

The use of foodstuffs in the production of alcohol, or of alcoholic on nonalcoholic beverages, may be limited, regulated, or prohibited, or reduction in the alcoholic content of any beverage may be required.

The percentages of flour which shall be derived from wheat in milling may be prescribed, and if it becomes essential to increase the food supply, the mixing of wheat, wheat flour, or other wheat products with any other cereal, cereal flour, or material of vegetable origin may be permitted or required.

Appropriate penalties are provided for enforcing the provisions of the bill.

Useful food gets into the garbage pail because the housewife in preparing potatoes or other vegetables and fruit, such as apples, cuts off with the skin a considerable percentage of edible material. Careless paring of potatoes may consign to the garbage pail as much as 20 per cent of the edible portion, including outer layers containing valuable mineral substances.

STOP THE ARMY WORM.

Watch Meadows Closely—Spray, Poisoned Bait, and Ditch Traps Will Control This Pest.

Watchfulness is the first weapon to use against the army worms. Upon the discovery of the pest in its younger stages depends very largely the possibility of stamping out infestations before serious injury to crops has occurred, declare entomologists of the United States Department of Agriculture.

Army worms are the young of certain moths or millers that fly only at night. The eggs from which the army worms hatch are commonly laid on grasses or grasslike grains and the tiny caterpillars, upon hatching, feed for several days near the ground, hidden by overhanging grasses or grains. They may escape notice until nearly full grown, by which time they have become widely distributed over the infested fields.

Meadows should be examined frequently during the spring and early summer months, particularly those planted to timothy, bluegrass, wheat, and especially millet. One should not be satisfied with looking merely at the surface of the stand; the thicker and longer the growth, the greater the danger from the army worm. The grain or grass should be parted with the hands in various parts of the field and the lower portions of the growth examined closely, in order that the presence of the small, greenish caterpillars may be discovered. If these be found in any number the area covered by the infestation should be determined and rigorous action taken at once to destroy the worms before they become large enough to begin their journey to other portions of the farm. If the infested spot be small, the grass or grain can be mowed off and straw scattered over the spot and burned, thus destroying the worms.

If the caterpillars have become distributed over a considerable area this can be marked off by stakes and the crop sprayed heavily with a mixture of Paris green at the rate of 1 pound to 50 gallons of water. If tender plants, such as corn, are to be sprayed, 2 pounds of freshly slaked lime should be added to 50 gallons of the mixture, to prevent burning of the foliage.

In case the worms are crawling in a body surround them with a furrow or ditch and crush them with a log drag as they fall into it. If shallow post holes are sunk in the bottom of the ditch at intervals of about 20 feet the worms will crawl along the ditch bottom and fall into the holes, where they may be destroyed.

Poisoned baits of varying composition have long been used as a means of destroying the many different species of cutworms and also the army worm. An effective bait of this kind may be prepared and used as follows: To 50 pounds of wheat bran and 1 pound of Paris green or 2 pounds of arsenate of lead add the juice of one-half dozen oranges or lemons. Then bring the mass to a stiff dough by adding low-grade molasses or sirup, preferably molasses, and scatter the mixture broadcast in small pieces throughout the infested field. This poisoned bait may be used safely in alfalfa and corn fields where it is desired, if possible, to save the crop for forage purposes.

In case this poison is used, care should be exercised in preventing stock from gaining access to the poisoned grass or grain and being injured or killed by eating it. It is far better to sacrifice a portion of the crop, if the destruction of the pest can be accomplished, because if army worms are not destroyed they will take the crop anyway and probably devastate other portions of the farm.

Additional information regarding the army worm may be obtained from Farmers' Bulletin 731, which will be sent free on application to the Department of Agriculture.

WASTEFULNESS OF SWARMING.

Curb Swarming and Secure the Greatest Possible Yields of Honey.

The old-time beekeeper boasted of the number of swarms which issued from his hives, but the modern beekeeper knows that swarming is one of his worst obstacles to producing a large crop. The modern beekeeper knows from experience that after he has given all his energy to getting every colony as strong as possible at the beginning of the honey-flow, he must not permit the bees then to spoil it all by dividing their forces.

Of course, it is impossible to do anything toward controlling swarming when the bees are in a box or "gum," and this is the chief reason why bees in a movable-frame hive are more profitable. It is also unfortunately true that in spite of the beekeeper's most strenuous efforts, colonies will sometimes swarm. In that event the beekeeper makes the most of a bad situation by keeping the forces together in another way.

The bee specialists of the United States Department of Agriculture advise that if swarming occurs when honey is coming in, the hive should be at once removed to a new place and a new hive placed in the old location. The swarm is now hived in this new hive and, because it is in the old location, all returning field bees from the colony join the swarm and the population is kept up. Later on there are various ways of reducing the parent colony still more, for by this means the issuing of worthless afterswarms is prevented.

The beekeeper who desires to get the greatest possible crop does not permit even one swarm to issue if he can help it. When swarming time arrives, he examines every colony once a week. If he finds queen-cells with eggs or small larvæ in them, he cuts every one out and thus makes it necessary for the bees to build other cells, if they still persist in their efforts to swarm. If, however, he finds larger cells with old larvæ, he knows that the impulse to swarm has developed too far, so he must satisfy it in some way. He may make an artificial swarm—at his convenience and not at that of the bees—or if he is a producer of comb-honey he may cut out all the queen-cells and cage the queen for 10 days until they get over their "swarming fever."

The skill of the beekeeper can usually be measured by the results of his work in curbing swarming. The poetry which others see in issuing swarms is entirely lost on a good beekeeper. The methods of swarm control are given in Farmers' Bulletin 503, "Comb Honey," which may be obtained on request from the United States Department of Agriculture.

HOARDING OF FOODSTUFFS.

The Secretary of Agriculture recommended the discouraging of hoarding of foodstuffs in the following telegram, sent on May 17, in answer to an inquiry:

"There is urgent need for large production of foodstuffs to meet the needs of this country, to supply the nations with which we are cooperating in this war, and in part to meet the requirements of neutrals in Europe. I believe that even after peace comes this nation will be called upon for a considerable time to meet demands for foodstuffs from abroad. It is urgent also that we conserve food and highly desirable that we eliminate waste, that the course of trade shall be free, and that there shall be fair dealing. There is no need for people to get hysterical or panicky. Hoarding of foodstuffs should be discouraged. Doubtless many persons who have laid in excessive amounts of products may learn that they could have purchased more favorably by following ordinary practice and that their stocks may deteriorate in quality. People of means should realize that by engaging in the practice of hoarding they lay an additional burden on the less well-to-do people, who are compelled to purchase from day to day."

The total world production of both beet and cane sugar nearly doubled during the 20 years 1893–94 to 1912–13, increasing from 11,000,000 to 20,000,000 tons.

WOOL PRODUCTION.

Cooperation of Wool Growers in Handling the Clip Urged as a Means of Increasing Profits.

The wool grower has under the present system no way of ascertaining whether or not the manufacturer is satisfied with his product. In consequence, improper methods of preparing the wool for shipment cost him from 1 to 3 cents a pound, for the manufacturer is frequently put to an extra expense, against which, of course, he protects himself by lowering the price to the grower. The grower does not often sell direct to the manufacturer, does not thoroughly understand the various processes through which the wool passes after leaving his hands, and remains ignorant, therefore, of the need for improvement in his methods.

To remedy this condition, some form of cooperation among wool growers in any given region is urged in a publication of the United States Department of Agriculture, Bulletin 206, "The Wool Grower and the Wool Trade." The individual alone can do little to improve matters, for his clip is likely to be too small to induce the buyers to make any alteration in their accustomed methods of estimating wool values. With cooperation, however, it should be possible to prepare the entire clip of any section, so that the reputation of its wool would be enhanced and the growers obtain the full market value of their product. A sufficient number of wool growers should be included in each cooperative association to enable at least 4,000 or 5,000 pounds of each of the various grades to be marketed at one time.

Cooperation will do little good, however, unless the individual growers follow improved methods of handling the clip. An instance of the present low price of American wool as compared with foreign is given in the bulletin already mentioned. Two lots of wool of the same grade, one of them from Idaho and the other from Australia, were purchased by a Philadelphia manufacturer—the American at 18½ cents a pound and the foreign at 28 cents a pound, before scouring. In the American fleece the kind of wool that this manufacturer really wanted amounted to 86.79 per cent of the total; in the foreign fleece to 98.96 per cent. A more accurate system of grading had given this manufacturer 12 per cent more of what he wanted than the American methods. In consequence the foreign sheep grower got the larger price for his fleece. The manufacturer paid for the imported wool 28 cents a pound and for the domestic wool 18½ cents a pound—a difference of 9½ cents. By the time shrinkage, "off sorts," etc., had been deducted, however, the cost per clean pound to the manufacturer of the wool he wanted was 41.32 cents for the American fleece and 44.69 cents for the imported—a difference of only 3.37 cents. It may have cost the foreign grower a little more to prepare his fleece, but he more than recovered this in the higher price he sold it for.

If American growers were in a position to understand a little better the needs of the manufacturer and the reasons for his preference for properly graded and packed fleeces, they would unquestionably be much more willing to alter their methods. The bulletin of the Department of Agriculture already mentioned gives in considerable detail much information on these points. It also suggests 15 rules for the woolgrower, which, it is said, no one can afford to neglect if he is at all solicitous of the reputation of his clip. These rules are:

1. Adhere to a settled policy of breeding the type of sheep suitable to the locality.
2. Sack lambs', ewes', wethers', and all buck or very oily fleeces separately. If the bucks or part of the ewes or wethers have wool of widely different kind from the remainder of the flock, shear such separately and put the wool in separate sacks so marked.
3. Shear all black sheep at one time, preferably last, and put the wool in separate sacks.
4. Remove and sack separately all tags, and then allow no tag discount upon the clip as a whole.
5. Have slatted floors in the holding pens.
6. Use a smooth, light, and hard-glazed (preferably paper) twine.
7. Securely knot the string on each fleece.
8. Turn sacks wrong side out and shake well before filling.
9. Keep wool dry at all times.
10. Make the brands on the sheep as small as possible, and use a branding material that will scour out.
11. Know the grade and value of your wool and price it accordingly.
12. Do not sweat sheep excessively before shearing.
13. Keep the corral sweepings out of the wool.
14. Do not sell the wool before it is grown.
15. When all these rules are followed, place your personal brand or your name upon the bags or bales.

CUT SPRAYING COST.

Arsenate of Lime May Be Used Instead of More Expensive Insecticides.

Buying in quantities and the use of substitutes offer ways of reducing the cost of spraying materials, which has increased markedly since last year. Entomologists in the United States Department of Agriculture, fearing that high prices of insecticides may operate against a more general utilization of them in the protection of crops this season, offer suggestions for cutting the cost.

An important saving usually can be effected in the consolidation of orders for insecticides from a neighborhood or their purchase through fruit growers' associations, or other cooperative buying organizations. The importance of this saving is realized when it is remembered that the difference in cost of certain insecticides, as arsenate of lead, in small packages at retail stores, over its cost in larger quantities from manufacturers or jobbers, often is 100 per cent.

Letters from orchardists and others to the Department of Agriculture indicate the intention of some to use cheaper arsenicals—though perhaps with less safety on some foliage—such as arsenate of lime. In view of this interest it is desirable, say the entomologists, to call to the attention of orchardists wishing to employ cheaper arsenicals the arsenate of lime, which can readily be made up at home as follows:

Fresh stone lime (90 per cent calcium oxide)	pounds..	5½
Sodium arsenate (fused, dry-powdered 65 per cent arsenic oxide)	pounds..	10
Water	gallons..	2½

Place the lime in a suitable container, then dissolve the sodium arsenate in a little boiling water and pour this solution over the lime to start it slaking. When slaking is well under way stir thoroughly and add more water as required until a total of 2½ gallons has been used. This will make about 35 pounds of arsenate of lime paste containing 18 to 20 per cent of arsenic oxide, approximately the amount of arsenic in arsenate of lead paste. With nominal prices for the materials this will cost 3 to 4 cents a pound. Arsenate of lime can be used on apples, pears, grapes, and certain hardy vegetables, but should not be applied to plants with delicate foliage, such as the stone fruits, as injury is likely to result. Use at the rate of 2 pounds to 50 gallons of spray.

Arsenate of lime can be used in Bordeaux mixture and in dilute lime-sulphur spray, just as is arsenate of lead. When used in water the milk of lime made from slaking 3 or 4 pounds of stone lime should be added to each 50 gallons of water.

Only sweet clover seed which germinates 75 per cent or more should be sown in the spring of the year unless the rate of seeding is increased to make up for poor germination.

Some families take pride in serving lavish and overbountiful meals and overgenerous service of food. This leads inevitably to waste of food on the table and is a temptation to overeating, which often impairs health and efficiency.

POISON GRASSHOPPERS.

Used While Insects Are Young, Poisoned Bait Proves Effective Method of Control.

Farmers need no longer be helpless against the ravages of grasshopper hordes in their fields. If discovered in the early days of their attack, these pests are now quite easy of control by means of poisoned baits, the most effective of which is described below. This method has been used with remarkable success in many parts of the United States, its complete effectiveness depending only upon the discovery of the young insects before they have attained any considerable size, when the injury done by them is still very slight, and when they are wingless and easily killed by poisons or mechanical means. Entomologists in the United States Department of Agriculture tell how to make and apply this bait, as follows:

The constituents are wheat bran, 25 pounds; Paris green 1 pound, or white arsenic 1 pound; lemons or oranges, 6 finely chopped; low-grade molasses such as refuse from sugar factories, or cattle molasses known as "black strap," 2 quarts; water 2 to 4 gallons. The bran and Paris green or other arsenical are thoroughly mixed while dry, the fruits finely chopped and added, and lastly the molasses and water are poured over the bait and the whole thoroughly kneaded. A coarse-flaked bran is most desirable, although where this can not be obtained easily ordinary middlings or alfalfa meal may be substituted; a low-grade, strong-smelling sirup or molasses, however, is essential to the entire success of the poison. Crushed ripe tomatoes, watermelons, or limes may be substituted for the lemons or oranges, if necessary. Ordinary powdered white arsenic (arsenious acid) contains nearly twice as much arsenic as Paris green and is comparatively low in price. The powdered form of arsenate of lead may be used, but in this case twice as much of it must be used as of the Paris green. In California and other semiarid regions water should be added to the bait at the rate of at least 4 gallons to 25 pounds of bran, as in these climates the bait dries out very rapidly and the extra moisture is necessary in order to attract the grasshoppers.

The poisoned-bran bait is distributed over the infested fields by sowing broadcast, either on foot or from a light wagon or buggy. In applying the bait in orchards, care must be taken to avoid distributing it close to the trees, because severe injury to fruit trees occasionally results from heavy applications of arsenical poisons.

The time of day chosen for distributing the poisoned baits has an important bearing upon the results secured. In California and other semiarid regions the bait should be distributed in late afternoon or early evening, just before the grasshoppers ascend the plants on which they usually pass the night. They are apparently hungry and thirsty at this time and greedily take the bait if it be available. In the moister portions of the country, such as New England and Florida, the bait is best applied in the early morning, before sunrise if possible. Farmers should not be discouraged if the grasshoppers do not drop dead immediately upon eating the poison, as it usually takes 24 hours or more for the full effect of the bait to become apparent.

Further information in regard to grasshoppers and their control may be secured from Farmers' Bulletin 747, which will be furnished free to those applying to the Department of Agriculture.

TRAP THE CHINCH BUGS.

The time to strike at chinch bugs, now that it is too late to burn them in their winter homes, is before they begin their migrations from fields of wheat, rye, or barley, about harvest time, into the corn. Be on guard for them. Their presence in these crops often is hard to detect, because the damage they do in such fields is obscure or of no apparent importance. It is important that the bugs be discovered before they begin to crawl toward the cornfields, entomologists in the United States Department of Agriculture say, for the corn then can be protected and the migrating insects trapped in the following way:

Plow a deep furrow along the edge of the field, running the land side of the plow toward the field to be protected. In dry weather the sides of the furrow can be made so smooth and so steep that the bugs will find it easier to crawl along the bottom than to climb up the sides. Circular holes from 30 to 40 feet apart, made with a post-hole digger, may then be dug in the bottom of the trench. Into these holes the bugs will fall in large numbers, where they may be killed easily by sprinkling kerosene oil over them. A log dragged back and forth along the furrow is useful in keeping the bottom and sides in good condition during dry weather.

Spraying for chinch bugs has not proved successful, except on a small scale and when conducted by an expert, the difficulty being that the substances which kill the bugs are almost sure to kill the corn also. The thing to do is to discover the bugs before they reach the corn and keep them out of it by the methods described above.

Additional information regarding the chinch bug is contained in Farmers' Bulletin 657, which can be secured free from the Department of Agriculture.

BABY BEEVES POPULAR.

Demand for High-Quality Meat and Increased Cost of Production Foster Growth of Industry.

The demand for small, high-quality cuts of meat and the increased cost of producing beef have combined to foster the rapid growth of the baby-beef industry. Baby beeves may be described as well-fattened, finished animals, weighing from 900 to 1,200 pounds and marketed when between 14 and 20 months old. It takes less food to produce a pound of flesh with them than with mature cattle, they sell as high as the best of other fat cattle, and markets for baby beeves have been very stable during the last 10 years. The young heifers sell as well as the steers, and the returns from the money invested in the production of such cattle come quicker. On the other hand, it takes more experience to succeed with baby beeves than with mature cattle, a better grade of stock is required, and farm roughage can not be substituted for grain to the same extent.

In a new publication of the United States Department of Agriculture devoted to this subject (Farmers' Bulletin 811) it is pointed out that the first necessity for the production of baby beef is a herd that has at least a fair amount of beef blood. The cows need not be purebreds, but they should have at least two or three crosses of such blood in them. A preponderance of dairy blood will not give profitable results. The cows should, however, produce enough milk to keep the calves well and growing without much additional feed.

A good bull will do much to offset defects in the cow herd. A good beef form and a strong tendency toward earliness of maturity are essentials; the owner's success, in fact, depends to a great extent upon the bull's ability to transmit the latter characteristic to his offspring. Money spent in acquiring a bull that will do this is likely to prove a good investment, for the whole baby-beef industry depends upon speed in finishing the animals for market.

A herd at least large enough to produce a carload of calves a year is recommended in the bulletin already mentioned. Shipping in carload lots is usually the only economical way of getting stock to market, from 20 to 27 baby beeves constituting a carload. Some allowance must, of course, be made for loss and for calves that are not suited for treatment as baby beef. Since a well-matured bull can easily take care of 50 or 60 cows, the bull charge per calf also will be greater when the breeding herd is small. On the other hand, great care must be taken not to crowd the pastures. Good bluegrass or clover should carry from 50 to 100 cows on a hun-

dred acres; other pastures from 50 to as low as 5. The amount of available roughage is another important factor in determining the size of the breeding herd. Roughage should form the basal portion of the ration for the cows. It can not be bought with profit at the prevailing prices, and no more cows should be kept, therefore, than the farmer can feed with home-grown roughage.

The feeding of the calves intended for market depends on a number of factors, such as the season of the year in which they are born, whether or not any other use is made of the mother's milk before weaning, and the age at which it is planned to sell the beeves. Suggestive rations in which these points are considered are given in the bulletin already mentioned. These are made up of corn, cottonseed meal, corn silage, clover hay, and oat straw. If barley, milo, kafir, or similar grains are substituted for corn, somewhat larger quantities should be used. Linseed meal may be used instead of cottonseed meal and if neither of these is available, a high-grade leguminous hay should be used for roughage.

WETTING SPOILS EGGS.

Dealers and Hucksters Urged Not to Buy Washed Eggs for Storage Purposes.

Approximately 5,016,000 dozen eggs spoil needlessly every year in cold storage simply because some one has let clean eggs get wet or has washed dirty eggs before sending them to market, according to the specialists of the United States Department of Agriculture. Careful investigations of large quantities of stored eggs show that from 17 to 22 per cent of washed eggs become worthless in storage, whereas only 4 to 8 per cent of dirty eggs stored unwashed spoil. The explanation is simple. Water removes from the shell of the egg a gelatinous covering which helps to keep air and germs out of the inside of the egg. Once this covering is removed by washing or rain which gets to eggs in the nest, germs and molds find ready access to the contents and spoil the eggs.

This enormous loss in storage eggs largely can be prevented if producers and egg handlers, especially during March, April, and May, will refrain from washing eggs destined for the storage markets and take pains to reduce the number of dirty eggs by providing plenty of clean, sheltered nests for their hens.

Millions of eggs spoil in storage because they have been exposed to dew, rain, dirt, and sun in stolen nests in the grass or fence corners.

In view of this great loss of valuable food, the department urges country storekeepers and hucksters not to accept washed eggs for shipment in case lots. Shiny eggs, especially in the early spring, probably have been washed. All washed eggs purchased should be sold locally for immediate consumption.

BOYS AND GIRLS HELP.

Pig-Club Boys and Girls Render Patriotic Service and Make Money at the Same Time.

The boys and girls on the farms and in the towns and villages can be of great service to Uncle Sam by producing pork. The young people between 10 and 18 years of age are eligible to the pig clubs and a great many of them are not at present doing anything for their country. If every boy and girl on the farm between the above-mentioned ages would make it his or her duty to feed and market one pig, there would be enough pork furnished from this source alone to feed a large army of men. A large number of boys have the facilities for feeding several hogs where none are being fed at present. Some of the pig-club boys are feeding as many as 35 or 40 head of their own and many are feeding their father's herds of many more than that.

Most of the boys that are not in the pig club do not have the pigs and do not know where to obtain them. There are thousands of small pigs and breeding sows being sent to market every day that should stay on the farms. Many of the sows should be kept to produce more pigs next fall. These small pigs could be profitably fed to make larger hogs even at the present prices of grains. The problem is to get these small pigs and sows into the hands of farmers and farm boys and girls that want them. There are county agricultural agents in many of the counties who know where these hogs are, and can get them before they are sent to market. If there is no county agent, the next man to appeal to is the banker. Many bankers know who have hogs to sell. If the county is short of hogs, the State club leader or the extension force at the agricultural college may be able to direct an inquirer to a breeder or a county agent in an adjacent county who has hogs to sell.

Grain and other swine feeds are scarce and expensive, but hogs can be grown and fattened with the use of little grain. The most profitable pork has always been produced when the hogs run on pasture and are fed a light ration of grain in addition. In every section of the country there are forage crops that will grow and make good hog pastures. By planting them now they should make good hog pasture during the summer. Even if there is no county agent in a county, there are a few progressive farmers in every community who know what crops are best and how best to plant them. Boys who have no hogs should plant their hog pasture first, and get their pigs later.

Boys who have no pigs nor money with which to buy them should ask a banker for help. He will usually be glad to help worthy boys who are trying to help the country in this emergency. Many of these bankers have asked the Department of Agriculture this year as to the best methods that have been used in furnishing boys money with which to purchase pigs. They are much more willing to do this if they know that the boy or girl belongs to a pig club and is going to follow the instructions of a swine specialist or some one who has scientific training in the growing and fattening of swine.

By joining the pig club the boys and girls will not only be able to make more money for themselves, but will also be rendering a patriotic service to the country. Every boy or girl between the ages of 10 and 18 years can join Uncle Sam's pig-club army. Those wishing to join the pig clubs should ask their parents, teacher, or county agent how to do this, or write to the extension division of the State agricultural college for instructions.

BREAD IN THE HOME.

Government Specialists Test Its Value and the Best Way of Preparing It.

If home-baked bread were uniformly well made it would be used more extensively than at present in place of more expensive foods, say specialists in the United States Department of Agriculture, and this would be a distinct economy. From the standpoint of nutrition it makes very little difference whether breadstuffs are served in the form of bread or in the form of breakfast cereals, side dishes with meat, or desserts. A man engaged in moderate muscular work can profitably consume about three-fourths of a pound a day of breadstuffs in any one of these forms. This quantity is the equivalent of 1 pound of baked bread. As a matter of fact, however, it is not probable that in the average family this quantity is consumed and the deficiency is made up by the use of more expensive substances. Of course, bread alone is not sufficient for the maintenance of health, but from both an economical and a hygienic point of view it should be used more extensively than it usually is.

In a new publication of the department, Farmers' Bulletin 807, detailed directions for the making of bread in the home are given, together with a number of convenient recipes for homemade biscuit, rolls, and bread in which rice or potatoes are used with flour. The bulletin also gives a score card, by means of which it is suggested the housewife can estimate the merit of her product.

Sweet clover is more drought resistant than alfalfa or red clover. It also is quite resistant to alkali.

CAN FOOD AT HOME.

How to Put Up Fruits and Vegetables by Method Taught to Canning Clubs in North and West.

Don't let valuable surplus fruits and vegetables go to waste. Adults and children, in a very few hours, with little other home equipment than a wash boiler and cans and jars, can preserve much valuable perishable food for next winter's use. Succulent vegetables and fruits are important to health the year round. See that your table is supplied.

The simple one-period cold-pack method described is that taught by the United States Department of Agriculture for the boys and girls of the canning clubs in the Northern and Western States. With this method thousands of boys and girls each season put up vast quantities of fruits and vegetables. With this method practically every vegetable and fruit grown in this section can be canned.

The wash-boiler method described below is entirely effective. Those who desire may purchase home-size water-seal, steam-pressure, or pressure-cooker canning outfits, which save time and fuel.

Preliminary Preparation for Canning.

Provide a false bottom of wooden lattice work, cross-pieces of wood, or coarse wire netting for your clean wash boiler or other large, deep vessel to be used for sterilizing.

Fill the vessel with clean water, so that the boiling water will cover the tops of the jars or cans. Begin heating the water so that it will be boiling violently by the time the containers are packed.

See that all cans or jars are in good condition and absolutely clean. Scald them thoroughly. Use new rubber rings and scald them just before putting them on the jars.

Preparing Fruits and Vegetables.

Start with clean hands, clean utensils, and clean, sound, fresh products.

Throw out all vegetables and fruits which are withered or unsound. Wash out all grit and dirt. If possible, use only fruits and vegetables picked the same day, and never can peas and corn picked more than 5 hours.

Prepare fruits and large-sized vegetables for blanching. Remove all spots from apples.

Prepare beans and greens as for cooking. Be especially careful to remove all foreign plants from the greens.

Blanch vegetables and all fruits except berries by leaving them from 3 to 5 minutes in clean boiling water.

Remove the blanched products from the boiling water and plunge them quickly into cold water, the colder the better. Take them out immediately and let them drain. *Don't let them soak in the cold water.*

From this point on speed is highly important. The blanched vegetables and fruits, which are slightly warm, must not be allowed to remain out of the jars a moment longer than is necessary.

Remove skins when required, and as each article is pared cut it up into proper size and pack directly into the clean, scalded cans or jars.

Pack as solidly as possible, being careful not to bruise or mash soft products.

In the case of fruit, fill the containers at once with boiling hot sirup.

In the case of vegetables, fill the containers with boiling hot water to which a little salt has been added.

Place scalded rubber rings on the glass jars and screw down the tops.

Seal tin cans completely. Watch them for leaks. As the preliminary treatment has taken care of expansion it is not necessary to exhaust the cans.

Can Surplus Food, but Use Jars and Cans Wisely.

Don't have an empty preserving jar in your home next fall.

There may be some difficulty in securing cans and preserving jars.

Reserve regular tight-sealing containers for vegetables, concentrated soups, meats, and fish.

Concentrate products so that each jar or can will hold as much food and as little water as possible.

Put up jams, jellies, and preserves in glasses sealed with cork or paper and paraffin. Pack fruit juices in ordinary bottles.

Don't can anything that can be kept just as well dried or in other forms. Dry navy and mature Lima beans for winter use.

Produce in your garden lots of cabbage, potatoes, and root crops that can be kept for the winter without canning.—U. S. Department of Agriculture.

Time table for scalding, blanching, and sterilizing of fruits and vegetables by one-period cold-pack method. (See N. R. Series.)

Products.	Scald or blanch.	Hot-water bath outfits at 212°.	Water-seal outfits at 214°.	Steam pressure 5 to 10 pounds.	Pressure cooker 10 to 15 pounds.
Fruits of all kinds:	*Minutes.*	*Minutes.*	*Minutes.*	*Minutes.*	*Minutes.*
Apricots	1 to 2	16	12	10	5
Blackberries	No.	16	12	10	5
Blueberries	No.	16	12	10	5
Cherries (sweet)	No.	16	12	10	5
Dewberries	No.	16	12	10	5
Grapes	No.	16	12	10	5
Peaches	1 to 2	16	12	10	5
Plums	No.	16	12	10	5
Raspberries	No.	16	12	10	5
Strawberries	No.	16	12	10	5
Citrus fruits	1½	12	8	6	4
Cherries (sour)	No.	16	12	10	5
Cranberries	No.	16	12	10	5
Currants	No.	16	12	10	5
Gooseberries	No.	16	12	10	5
Rhubarb (blanch before paring)	1 to 2	16	12	10	5
Apples	1½	20	12	8	6
Pears	1½	20	12	8	6
Figs	15	40	30	25	20
Pineapple	10	30	25	25	18
Quince	6	40	30	25	20
Special vegetables and combinations:					
Tomatoes	1 to 3	22	18	15	10
Tomatoes and corn	T. 2, C. 10	90	75	60	45
Eggplant	3	60	45	45	30
Corn on cob or cut off	5	180	90	60	45
Pumpkin	5	90	50	40	35
Squash	5	90	50	40	35
Hominy	5	120	90	60	40
Cabbage or sauerkraut	5	90	75	60	35
Greens or pot herbs:					
Asparagus	5	120	90	50	35
Brussells sprouts	5	120	90	50	35
Cauliflower	5	120	90	50	35
Pepper cress	15	120	90	50	35
Lamb's-quarters	15	120	90	50	35
Sour dock	15	120	90	50	35
Smartweed sprouts	15	120	90	50	35
Purslane or "pusley"	15	120	90	50	35
Pokeweed	15	120	90	50	35
Dandelion	15	120	90	50	35
Marsh marigold	15	120	90	50	35
Wild mustard	15	120	90	50	35
Milkweed (tender sprouts and young leaves)	15	120	90	50	35
Pod vegetables:					
Beans (lima or string)	5	120	90	60	40
Okra	5	120	90	60	40
Peas	5	120	90	60	40
Roots and tubers:					
Beets	6	90	75	60	35
Carrots	6	90	75	60	35
Sweet potatoes	6	90	75	60	35
Other roots and tubers, as parsnips or turnips	6	90	75	60	35
Soups, all kinds	.....	90	75	60	45
Shellfish	3	180	120	90	60
Poultry and game	20	210	180	150	60
Fish	5	180	180	150	90
Pork and beef	30	240	240	210	90

Put the jars or cans as soon as possible into boiling water in a wash boiler or into your canning device. Let them process for the time specified in the table, counting from the time the water begins to boil again, or the gauge on the canning outfit registers the proper pressure.

Time schedule given is based upon the 1-quart pack and upon fresh-picked products.

When processing fruits in steam-pressure canners, not over 5 pounds of steam pressure should be used.

When processing vegetables and meats do not use over 15 pounds of pressure.

After processing, remove the containers.

Tighten the tops of jars immediately and stand the containers upside down in a cool place, being careful that no draft strikes the hot jars. Watch for leakage and screw covers down tighter when necessary. Store in a cool, dry place, not exposed to freezing temperature.

Use band labels for cans, being careful not to let the glue get on the can itself, as it may cause rust.

From time to time, especially in very hot weather, examine jars and cans, making certain that there are no leaks, swellings, or other signs of fermentation.

There will be no spoilage if the directions are followed implicitly and the containers are sealed up tight.

Fruits which are put up with heavy sirups can be kept under cork and paraffin seal. Save all wide-necked bottles, glasses, and jars for putting up fruits.

Vegetables, meats, and fish, however, can not be kept safely unless they are hermetically sealed. Reserve regular jars for products that can not be packed in other ways.

As there may be some difficulty in securing cans and jars, dry or keep in other ways everything that need not be canned.

FEVER QUARANTINE EXTENDED.

The Secretary of Agriculture has extended to Porto Rico the interstate quarantine against cattle fever maintained by the Department of Agriculture in certain sections of the South. The spread of the cattle disease from Porto Rico to the mainland of the United States has been prevented heretofore by control of cattle shipments from the island under import regulations. Few cattle are brought to the mainland of the United States from Porto Rico.

The United States Weather Bureau at a number of points is making extensive studies of snow depths and densities in the higher mountain districts both to be able to anticipate flood conditions and also to give cities which get their water supplies from these sources advance knowledge of the volume they may expect from their watersheds.

REDUCING BREAD COST.

By Baking Bread at Home Housewives Should Be Able in Many Cases to Reduce Expense.

By the home baking of bread—the largest single item in the diet in almost every household—housewives should be able in many cases to reduce expenditures for food, say specialists of the United States Department of Agriculture. The making of this important food in the home is a relatively simple process, the specialists point out.

"Many a Mickle Makes a Muckle."

AN OUNCE OF MEAT.

An ounce of edible meat—lean meat, fat and lean, suet or fat trimmed from steak, chop, or roast—seems hardly worth saving.

Many households take just this view of the matter—do not trouble to put such an insignificant scrap into the ice box or soup pot—do not bother to save for cookery a spoonful or two of drippings or a tiny bit of suet or fat.

Yet if every one of our 20,000,000 American families on the average wastes each day only 1 ounce of edible meat or fat, it means a daily waste of 1,250,000 pounds of animal food—456,000,000 pounds of valuable animal food a year.

At average dressed weights, it would take the gross weight of over 875,000 steers, or over 3,000,000 hogs—bones and all—to provide this weight of meat or fat for each garbage pail or kitchen sink. If the bones and butcher's waste are eliminated, these figures would be increased to 1,150,000 cattle and 3,700,000 hogs.

Or, again, if the waste were distributed according to the per capita consumption of the various meats (excluding bones), it would use up a combined herd of over 538,000 beef animals, 291,000 calves, over 625,000 sheep and lambs, and over 2,132,000 hogs.

Millions of tons of feed and hay, the grass from vast pastures, and the labor of armies of cattlemen and butchers also would be scrapped by this meat-waste route.

But every household doesn't waste an ounce of meat or fat every day? Very well; make it one out of a hundred families, but keep in mind that all meat allowed to spoil and all meat and fat rendered inedible by improper cooking, scorching, or burning must be counted as waste. Make it an ounce every other day or one a month. Such waste still would be unendurable when meat is scarce and when fat is of such vital food importance to many nations.

Waste of meat or fat is inexcusable. Every bit of lean meat can be used in soups, stews, or in combination with cereals; every spoonful of fat can be employed in cookery; every bit of drippings and gravy can be saved so easily and used to add flavor and nourishment to other dishes.

The United States Department of Agriculture, Washington, D. C., or your State agricultural college will tell you how to use bits of meat to make appetizing and nutritious dishes and how to use left-over fat in cookery.

Even housewives not accustomed to home baking should be able to produce satisfactory results by using the following simple recipes of the department:

White Wheat Bread, Short Process.

For one loaf of bread pour one cup of boiling water, scalded milk, or a mixture of the two, into a mixing bowl over 1 teaspoonful salt, one tablespoonful sugar, and one tablespoonful lard or other fat, if fat is desired. Allow the mixture to cool until it is lukewarm. Mix one-half cake compressed yeast with a little of the lukewarm liquid and pour it into the other mixture. If liquid yeast is substituted for the compressed sort, the ingredients should consist of one-fourth cup of yeast, three-fourths cup milk, water, or milk and water mixture, and the quantities of the other substances already mentioned.

If convenient, set the mixture of yeast, liquid, salt, sugar, and fat aside in a warm place, not over 86° F., for an hour, before adding the flour. If not convenient to set the mixture aside, add the flour at once, putting in a little at a time and kneading until the dough is of such consistency that it sticks neither to the bowl nor to the hands. This requires about 10 minutes. After the flour is added, cover, and allow to rise one and three-fourths hours at a temperature of 86°; it may be better to set it at a lower temperature, but the lower the temperature the longer the time required for the rising. Cut down the dough from the sides of the bowl; grease the hands slightly. Knead a little and set aside to rise again for an hour. With a good bread flour the dough should treble its bulk in each rising. With a soft wheat flour, it should not rise much beyond twice its volume. Divide into portions, mold, and place in greased pans of standard size (1½ quarts). Allow to rise until a light touch will make a slight dent. With good bread flour this happens when the dough reaches the top of the pans. Bake 50 minutes.

Short Sponge Method.

The short sponge method requires setting for a considerable period. All ingredients are the same as for the short process, but only half the flour is added at first. When the resulting mixture, which is called a "sponge," is so light that it will fall at the slightest touch, the rest of the flour should be added.

Overnight Sponge Method.

Use the same proportions as for the short process, except in the case of the yeast, which should be one-eighth cake of compressed yeast or 2 tablespoonfuls of liquid yeast for each loaf. Use water rather than milk. In the evening mix the yeast with water, salt, and half of the flour, and beat thoroughly. Cover and place at a temperature of 65° to 70° F., or that of an ordinary

room. In the morning add the sugar and the rest of the flour and proceed as in the case of the short process.

Overnight Straight-Dough Method.

Use the same ingredients as for the overnight sponge method, but put in all the ingredients at night.

Mixed Wheat Flour Breads.

The recipes given above for white bread can be followed in making bread out of part graham and part white flour. The usual proportions are either one part of graham to two parts of white, or half graham and half white. In all cases, however, white flour should be used for making the sponge. In place of the sugar an equal amount of molasses may be used. Such bread will not rise quite as much as bread made of white flour only.

Whole-Wheat or Graham Bread.

1½ cups lukewarm milk.	3 cups whole-wheat or graham flour.
3 tablespoons brown sugar.	½ yeast cake.
1½ teaspoons salt.	

Scald the milk, together with the sugar and salt. When lukewarm, add the yeast, mixing it first with a little of the milk. Add the flour, beat well, and let it double its volume. Beat it thoroughly, put into a pan, and let it rise. In a pan of standard size it should come nearly to the top.

The above recipe may be used in preparing bread from home-ground meal. There are many households, particularly in the country, where clean whole wheat can be obtained at moderate cost. If ground in the ordinary coffee mill, such wheat makes a coarse bread, not very light in texture, but of such good flavor that it may well be used occasionally to give variety to the diet. It is useful, too, in places where good bran can not be obtained easily and where coarse breads are desired as a means of preventing constipation.

In making such bread with a view to economy the housekeeper should compute what it will cost her per loaf, including labor and fuel, as compared with other breads she makes. Skim milk instead of whole milk can be used; homemade yeast, either liquid or dry cakes, is a possibility; and some might like the bread with less sugar or unsweetened. Another recipe which has been worked out follows:

Home-Ground Wheat Bread.

1½ cups water or skim milk.	3 cups home-ground wheat flour.
1½ teaspoons salt.	½ cake dry yeast or 1 gill liquid yeast.
1 tablespoon sugar.	

Set a sponge at night, using half of the flour. In the morning add the rest of the flour, beat well, put into a greased pan, allow to rise until it doubles its bulk, and bake. (For particulars as to setting the sponge, etc., see directions for making wheat bread.)

MAKE COTTAGE CHEESE.

How to Use Skim Milk in the Production of a Nutritious Food—Good Substitute for Meat.

Cottage cheese furnishes a convenient and economical means of using skim milk as human food. It can be easily made on a small scale and requires no special equipment. The cheese is nutritious and is an excellent substitute for meat. Each pound of cottage cheese furnishes as much protein or body-building material as the same weight of beef. It is, however, not quite so rich in its energy supply as meat.

Because of its ease of making it is desirable to make the cheese often, so that it may be eaten fresh, although if it is kept cool it will not spoil for several days. The following directions have been prepared by the Dairy Division, United States Department of Agriculture.

The Method of Making.

Setting.—Select as much good skim milk as will be needed for a two or three days' supply. Each gallon of skim milk will make about 1½ pounds of cheese. The skim milk should first be placed in a pail or shotgun can, warmed to 75° F., and allowed to stand at that temperature until curdled. A thermometer should always be used; never guess at the temperature. The temperature can be controlled by keeping the pail or can of milk in a tub, sink, or other vessel filled with water of the same temperature. The time required for curdling will depend upon the freshness of the milk. When a starter or good sour milk is available a better and more uniform cheese can be made and the time for curdling lessened. About a cupful of starter or good sour milk per gallon of skim milk is sufficient, although more may be used. With that quantity of starter the skim milk will curdle in from 10 to 15 hours, while without starter fresh milk may not curdle for 24 hours, or even longer. The greater the quantity of starter the sooner curdling will take place. During the setting no special attention is necessary. As soon as a firm, smooth curd has been formed, it is ready for cutting.

Cutting, heating, and stirring.—The curd is cut into 1-inch or 2-inch squares with a long-bladed knife. The temperature of curdled milk (or coagulum) is then raised to 100° F., and the mass stirred gently from time to time. When that temperature has been maintained for about half an hour the curd is ready to be drained. The degree of heating largely determines the dryness of the cheese; the higher the temperature the drier the cheese will be.

Draining.—After heating the curd is poured into a cheesecloth sack or a piece of draining cloth thrown over a pail. If a pail is used it will be necessary to pour out the whey occasionally, so that draining will continue. In 15 or 20 minutes the curd will become mushy and will drain more slowly. The sides of the cloth may then be raised and lowered every few minutes to hasten draining. When the curd is rather firm and the whey has nearly ceased to flow it is ready for salting, although tastes differ somewhat, some preferring a dry while others a soft, moist cheese.

Salting.—The cheese should be salted to suit the taste. Usually, however, from 1 to 2 teaspoonfuls per gallon of milk is about the quantity desired. The salt may be sprinkled over the curd and worked in with a spoon or paddle. The cheese is then ready to eat. If kept several days, it should be stored in an earthenware or glass vessel rather than one of tin or wood. The cheese should be stored in a cold place, as it will keep longer without becoming sour or moldy.

Cottage cheese made with rennet, a junket tablet, or pepsin has a finer and more uniform texture and requires less time and attention in making. Any one of these will cause the milk to curdle sooner. The process of making is the same, except that 4 to 5 hours after the skim milk is set at 80° F., 2 or 3 drops of liquid rennet per gallon of milk are diluted in a tablespoonful of cold water and stirred into the milk. When rennet is not available, one-eighth of a junket tablet per gallon of milk may be dissolved in a tablespoonful of cold water and stirred into the milk. Powdered pepsin may be used for the same purpose, a quantity that will remain upon the point of a penknife being dissolved in a tablespoonful of cold water and then mixed with the milk. When rennet, junket tablet, or pepsin is used the coagulum is placed in a drain cloth without cutting or heating. A finer and heavier draining cloth is necessary because of the fineness of the curd. The cheese is salted as described.

Sweet or sour cream added to cottage cheese makes a richer and more palatable product.

While for small-scale operation the pasteurization of skim milk may not always be practicable, it permits a better control of the fermentation, increases the yield of cheese, and renders the product safe from disease-producing organisms. With pasteurized milk it is absolutely necessary to use a starter.

Cottage cheese is judged by its flavor and texture. A high-quality cheese should have a clean, mild acid flavor and a texture smooth, free from lumps, and uniform or homogeneous throughout. Flavor can be controlled by the use of clean, sweet skim milk and a good starter, but texture largely depends upon careful manipulation during the making process.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JUNE 13, 1917. No. 45

STATEMENT ON FOOD BILLS.

Secretary of Agriculture Discusses Food-Production Bill and Food-Control Measure—Prevention of Monopolization—Meaning of Price-Fixing Provisions.

The Secretary of Agriculture, D. F. Houston, to-day (June 11) issued the following statement:

Cooperating as we are with the nations of Europe in the war against the central powers, the task of maintaining the subsistence of the allies is at once a political and moral obligation and a military necessity. War is always destructive of production and, in a peculiar sense, it is destructive of production of foodstuffs, since war leads to scarcity of labor, and labor is one of the chief factors in the cultivation of the soil. In addition, the wheat crop of practically the entire world has suffered serious reduction during the past year, and the prospects for the coming year promise little or no increase in the production of this essential cereal.

One of two courses lies open to our Government. The first is to continue as we are doing at present; that is, to permit unhampered the abnormal operations of trade, rendered all the more abnormal because of the needs of the allies for foodstuffs from this country. The second plan consists in the regulation or control of our foodstuffs, to the double end of maintenance of the subsistence of the allies and the protection of the food needs and commercial interests of our own people.

Two bills have been under consideration in Congress which provide for systematic development of our productive forces and an adequate control of distribution and consumption, to the end of conserving for ourselves and for the allies the foodstuffs provided through the stimulation of agriculture.

The two bills, known as the "food-production bill" (H. R. 4188), and the "food-control bill" (H. R. 4630), are designed to place in the hands of the administration emergency powers and funds adequate to accomplish the necessary ends. The production bill provides for the extension of the normal activities of the department with a view further to stimulate the production and to conserve the supply of foodstuffs. The bill is framed as a war measure. It authorizes the Secretary of Agriculture to make a survey of the food supply of the Nation, in order to secure full and accurate information regarding its quantity, location, and ownership, as well as knowledge of the instrumentalities or agencies that own, control, manufacture, and distribute food products. Authoritative information as to the supply of food available in the United States always is of the highest importance. It is imperative in the existing emergency, when soaring prices create unusual motives for manipulation, speculation, and hoarding. Intelligent increase of production and equitable distribution depend upon thorough and reliable knowledge of the food supply. This survey can be quickly made. It will probably be followed by monthly reports. If the war lasts, a further survey may be made after an interval of five or six months. All this work, it is contemplated, can be done for $500,000 or $600,000.

The bill also authorizes the Secretary of Agriculture, in case of special need in restricted areas, to purchase, grow, or otherwise procure seeds for the production of food or feed crops; to store them; and to furnish them to farmers on credit or other terms at cost. Power also is given to requisition such seeds and to fix a reasonable price to be paid for them by the Government, such price to be subject to review by the courts. These new powers are required by the Department of Agricurture to meet special emergency needs that may arise on account of adverse conditions, such as storms, plant diseases, or insect injury, in order that production may be maintained at a high level. It is also necessary to protect the seed reserve from use or depletion for industrial or consumptive purposes.

Provision is made for the enlargement of the cooperative agricultural extension forces. It is proposed to place at least one county agent in every rural county of the Nation and also further to develop the extension work for women. At present only about 1,300 counties out of 2,850 rural counties are provided with county agents. The remaining provisions of the bill have in view the following objects:

1. To stimulate the production of live stock; to promote the conservation and utilization of meat, poultry, dairy, and other animal products; and to make a larger attack upon animal diseases and pests, such as hog cholera, contagious abortion, and the cattle tick, which exact an annual toll of over $200,000,000.

2. To extend the activities of the department dealing with destructive plant diseases and insect pests.

3. To conserve perishable crops by stimulating better handling and storage, drying, canning, and the like.

4. To extend and develop the market news service for fruits and vegetables, as well as of other important activities of the Office of Markets and Rural Organization. It is proposed to enlarge the number of products upon which market reports now are furnished so as to include all the more important fruits and vegetables and such staples as dried peas and beans.

5. To provide facilities for dealing effectively with the farm labor problem, in cooperation with the Department of Labor.

6. To extend and develop the work of the Bureau of Crop Estimates, the Bureau of Chemistry, the activities of the department in connection with the destruction and control of predatory and other animals which destroy live stock and crops, and the publication and informational work of the department.

The second bill, known as the "food-control bill," aims to facilitate and clear the channels of distribution, prevent hoarding, assure fair prices, restrain injurious speculation, prohibit evil practices on exchanges, protect the public against corners and extortion, and reduce waste. It deals with the necessaries of life, including foods, feeds, shoes, clothing, fuel, and articles required for their production. It is strictly a war-emergency measure. It confers, for the

duration of the war, wide powers upon the President in the directions indicated, to be exercised only after he has found that a state of affairs warranting action exists. It is specifically stated that the legislation arises from a war emergency and is essential to the successful carrying on of the war. All the powers included in the bill doubtless will be exercised through an emergency agency which the President is authorized by the bill to create.

Authority is given to license and regulate any business of manufacture, storage, and distribution of foods, food materials, or feeds, whenever the President deems it essential to prevent uneconomical manufacture or inequitable distribution. Licensees also may be required to put hoarded stocks on the market and to refrain from unfair practices and prices. The general purposes of such control of business in war time are to promote efficiency and economy in the manufacture and distribution of foods, food materials, and feeds, and to eliminate abuses.

The President is authorized, in order to prevent spoilage, to direct the disposition of food which is going out of condition, as well as to direct the market movement of perishable products, with a view to prevent gluts or to effect equitable apportionments. He is also given power to prevent the hoarding or monopolization of necessaries by requiring persons holding unreasonably excessive quantities to dispose of them.

Another section of the bill gives the President authority to procure necessaries by purchase or otherwise, to store them, and to dispose of them at cost, and also to requisition and operate any factory, mine, or other plant in which food or fuel may be produced or mined. The purpose of this authority is to enable the President to break monopolies in necessaries, to prevent unreasonable enhancement in prices, and to eliminate injurious speculation. Power also is given to the President to regulate and, if need be, to close exchanges which deal in necessaries in order to eliminate evil practices. The purposes are to prevent injurious speculation, market manipulation, undue enhancement or fluctuation of prices, and unfair or misleading market quotations.

If it becomes essential to stimulate the production of necessaries within the United States, a guaranteed price may be fixed by the President which domestic producers, who act in reliance upon the guaranty, will be entitled to receive. The bill contains an antidumping clause, in order to prevent flooding of the American market with excessive importations which might defeat the practical operation of the guaranty. If essential, a duty, the amount of which will be ascertained by the President, is levied on such importations. In case of extreme emergency, in order to break corners or to prevent extortion, the President may ascertain and prescribe the highest price at which it is reasonable to deal in any particular necessaries. If such a price be fixed, it will thereafter be unlawful for anybody, except one dealing with products of land cultivated by him, to sell at a higher price. The President also is authorized to limit, regulate, or prohibit the use of foodstuffs in the production of alcohol or of alcoholic or nonalcoholic beverages, or to require reduction in the alcoholic content of any beverage.

The President, on May 20, issued a statement in which he discussed the powers that have been requested and indicated his intention of creating the position of Commissioner of Food Administration. He also stated that he had asked Mr. Herbert C. Hoover to accept the position. The two bills, the provisions of which I have summarized, should operate in close harmony and supplement each other. The Department of Agriculture with its large, efficient, and established machinery will cooperate with the food administration to be created under Mr. Hoover in close and effective agreement. With the increase of production attained through the operation of the first of these bills, and the regulation of manufacture, distribution, conservation, and utilization attained under the second measure, our people will be spared many of the hardships of war, particularly in its influence upon the cost of living, and the successful prosecution of the war will be greatly advanced.

GRASS CLIPPINGS FOR POULTRY.

Grass clippings are an excellent green feed for chickens. The back-yard poultry flock of a family often lacks sufficient green feed, with a consequent reduction of egg and meat production. With the easy availability of lawn clippings the city poultryman can always have green feed through the summer for his chickens. The flock can be fed daily as much of the green clippings as they will eat. If any continued bowel trouble shows, the amount should be reduced. The remainder of the clippings can be allowed to dry and fed moistened during the time between lawn cuttings.

Amounts in excess can be dried for winter use. Dried grass clippings are a good green feed for winter. They can be dried and stored in sacks. These dried clippings, moistened and fed to the flock, are a very fair substitute for the succulent green feeds of summer.

ORGANIZE FARM LABOR.

Departmental Cooperation in Solving Farm-Labor Problem. Plan for Distributing Available Help.

Under the Government plan for the organization of farm labor, the details of which have just been announced by the United States Department of Agriculture, provision is made for nation-wide cooperation in the solution of the farm-help problem. The work of organization already has been started in about 40 States, and it is expected that eventually every community in the United States will be reached. It is believed that the resultant utilization of emergency labor will begin to have an appreciable effect on the farm-labor situation before the season has far advanced. Meanwhile the immediate and acute problem of supplying labor for the harvests, now beginning in the Southwest, is being handled, so far as the United States Government's services are concerned, through the existing employment service of the United States Department of Labor, which will continue to handle such problems of mass mobilization under the new plan as it has in the past.

Federal and State Cooperation.

The plan is based on close cooperation on the part of the United States Department of Agriculture and the United States Department of Labor with State committees on national defense charged with labor matters, with the State agricultural colleges, with the county agents, and with county and local or township labor committees or representatives to be established in every locality. The Department of Agriculture will represent the Federal authorities in determining farm-labor needs and in assisting in organizing all available farm labor in the rural districts. The Department of Labor will devote its attention to organizing labor in urban communities and industrial regions, and will cooperate with the farm-labor forces where necessary by obtaining extra labor from the populous centers.

The plan provides for strictly local handling of all labor problems that can be adjusted locally. The fundamental unit of the organization is the "community man," who, with the assistance of such committees as he may appoint, canvasses his own neighborhood, finds out what farmers need help and what men are available for supplying the local need, and effects such adjustments as can be made locally. If, after all local adjustments have been made, there remains either a deficit or a surplus of labor, he

reports to the "county man," whose business it is to effect adjustments between the several communities in his county. The county man, in turn, reports any deficit or surplus to the "State man," who canvasses the situation for the State as a whole and reports to the United States Department of Agriculture, which, in close cooperation with the United States Department of Labor, is charged with the distribution of mobile labor for the country as a whole.

Thus each unit in the system acts as a clearing house for its own territory, reporting to the units higher up only when it needs help or has help to offer. The plan provides that supplemental reports shall be submitted by each community man whenever changes in the local labor situation make desirable further adjustments that can not be met with the material at hand or when a surplus of labor develops which he can not use.

A great many retired farmers, of whom there are 700,000 in the country, may be available for emergency service under this plan of farm-labor mobilization. The plans contemplate also the drawing of emergency labor from the cities under the immediate direction of the United States Department of Labor, the effective utilization of college students and schoolboys, and, if necessary, the assignment of volunteer women and girls to rural tasks connected particularly with feeding and caring for harvest hands or other extra labor, or with farm canning or drying of surplus perishable products. In other words, the plan contemplates supplying assistance not merely for field operations, but to farm women during their season of heaviest domestic duties.

BRANCH FOR INSECT CONTROL.

To enlarge the campaign toward the control of insects infesting stored food products, a new section has been organized in the Bureau of Entomology of the United States Department of Agriculture. The Secretary of Agriculture has appointed to the new position Dr. E. A. Back, of the bureau, as entomologist in charge of stored-product insect investigations. This change allows Dr. F. H. Chittenden, who has heretofore carried on the food-insect work of the bureau in connection with investigation of truck-crop insects, to give his entire time to pests of truck crops, a field also of great importance at this time.

Dr. Back has left Washington to investigate the grain and food storage situation through the country. He will study present storage conditions and determine the needs as they relate to insect control for the proper care of the food crops after the coming harvest.

SICK HOGS.

Act Quickly When Hog Cholera is Suspected—Anti-hog-cholera Preparedness Urged.

Don't take a chance with a sick hog. Act quickly. Get a veterinarian or a trained man immediately. Don't wait a single hour when you suspect disease in your herd. Use the telephone or send to town at once. Only prompt action will stop hog-cholera losses. Every hog saved will help win the war.

This is the message of tremendous importance which the United States Department of Agriculture is carrying to farmers, not only in the great hog belt included in Iowa, Missouri, and Illinois, and nearby States, which produce 34 per cent of the hog output of the United States, but also to farmers of the South, where in several States in 1916 hog losses due to cholera rose to two to three times the average losses for the country. Hog losses in 1916 by disease rose to 130 per 1,000 in Arkansas, 105 in Louisiana, 100 in Florida, 80 in Georgia, 76 in Tennessee, 70 in Alabama, and 65 in Mississippi, against an average of 48 per 1,000 for the entire country. At least 90 per cent of these losses were attributed to hog cholera.

The time for argument about anti-hog-cholera serum is past, declare the specialists of the Bureau of Animal Industry, United States Department of Agriculture. Explicit figures are readily available which prove unmistakably that, when administered in time by competent persons, hog-cholera serum will keep well hogs from taking the disease for a period of three to six weeks. Not argument but quick action is imperative to get serum and a trained operator to the farm to treat the hogs. Hogs will be saved and the Nation's meat supply increased if every farmer will immediately upon sign of disease call in the nearest available expert to diagnose the complaint and administer whatever treatment is necessary.

The Department of Agriculture is urging that all State, county, and local live-stock interests, including State veterinarians, live-stock boards, State college workers, county agents, and local veterinarians, begin immediately to organize anti-hog-cholera preparedness campaigns to reach every farmer in every county. Such organization already exists in many places. Where it does not there is need of special and immediate action before the hot-weather conditions favorable to hog cholera come on.

Bankers and other business men can aid in the work of informing farmers where they can get expert help immediately when they suspect cholera in their herds. Lists of accredited persons competent to diagnose cholera and administer serum, together with their addresses and telephone numbers, should be furnished to each farmer in the county, with the appeal that he call for help at once in case of need. Business men may also arrange through the local veterinary authorities or county agents to buy serum at the nearest State serum plant, private plant, or serum depot, and hold it in reserve for emergency use. State and Federal animal-industry authorities should be notified at once by telegram of any outbreak.

Because a single outbreak of hog cholera on any farm is a matter of moment to the entire community, and because hog-cholera infection is rapidly spread in many ways, the Department of Agriculture is urging farmers to employ every possible measure to keep the disease out of their herds. The department has issued a special hog-cholera poster—"Stop Hog-Cholera Losses"—which gives specific directions for avoiding infection by sanitary and self-quarantine measures; also directions for the isolation and treatment of cholera-infected hogs, and directions for disinfection and restocking the hog lot. Farmers' Bulletin 834, soon to be published, contains the latest information at the command of the United States Department of Agriculture concerning hog-cholera prevention and the immunization of hogs against the disease.

GRAZING PREFERENCES PROTECTED.

In response to an inquiry from the National Wool Growers' Association, the Forest Service has announced that stock growers having National Forest grazing preferences will be permitted, if they enlist in the Army or Navy, to retain their preferences without use of the range during the period of enlistment. Those wishing to avail themselves of this privilege will file a statement similar to that now required of State and Federal employees who wish to discontinue use of the range during their term of service without losing their preferences.

Use of the range in their absence will be provided for by issuing temporary permits to others, with the understanding that the privilege of use terminates when the former permittee returns. Preference privileges temporarily surrendered are subject to any general changes affecting range use which may be made during the absence of the holders.

HOME DRYING.

Scarcity of Cans or Glass Jars Makes Drying Desirable—How to Dry Vegetables.

Dry vegetables and fruits for winter use if tin cans and glass jars for canning are scarce or expensive.

This is the advice of specialists of the United States Department of Agriculture, who recently have studied the possibilities of conserving food to meet war needs in spite of any difficulties that may be experienced in obtaining canning containers. Drying was a well-recognized and successful way of preserving certain foods before canning came into general use, the specialists point out, and modern methods make it still more practicable than formerly, either in the home or by community groups.

Methods of Drying.

Three methods of drying have been found by the department specialists to give satisfactory results. These are sun drying, drying by artificial heat, and drying with air blasts, as before an electric fan. Trays for drying by any one of these methods, as well as tray frames for use over stoves or before fans, can be made satisfactorily at home. Frames and trays for use with artificial heat may be purchased complete if desired.

Homemade trays may be made of side and end boards three-fourths of an inch thick and 2 inches wide and bottom boards of lathing spaced one-fourth of an inch. If desired, ¼-inch galvanized wire mesh may be tacked to the side and end boards to form the bottoms of the trays. Frames for use before fans may be made of wood of convenient size. Frames for use with artificial heat should be made of noninflammable material to as great an extent as possible. As many as six trays may be placed one above the other when artificial heat is used. In drying before a fan the number of trays that may be placed one above the other will depend, to a large extent, upon the diameter of the fan. In drying in the sun, trays as described may be used or the products to be dried may be spread on sheets of paper or muslin held in place by weights.

Preparing Products for Drying.

Vegetables and fruits will dry better if sliced. They should be cut into slices one-eighth to one-fourth of an inch thick; if thicker, they may not dry thoroughly. While drying, the products should be turned or stirred from time to time. Dried products should be packed temporarily for 3 or 4 days and poured each day from one box to another to bring about thorough mixing and so that the whole mass will have a uniform degree of moisture. If during this "conditioning" any pieces of the products are found to be too moist, they should be returned to the trays and dried further. When in condition the products may be packed permanently in tight paper bags, insect-proof paper boxes or cartons, or glass or tin containers.

Recipes.

Spinach and parsley: Spinach that is in prime condition for greens should be prepared by careful washing and removing the leaves from the roots. Spread the leaves on trays to dry thoroughly. They will dry much more promptly if sliced or chopped.

Beets: Select young, quickly grown, tender beets, which should be washed, peeled, sliced about an eighth of an inch thick, and dried.

Turnips should be treated in the same way as beets.

Carrots should be well grown, but varieties having a large woody core should be avoided. Wash, peel, and slice crosswise into pieces about an eighth of an inch thick.

Parsnips should be treated in the same way as carrots.

Onions: Remove the outside papery covering; cut off tops and roots; slice into one-eighth-inch pieces and dry.

Cabbage: Select well-developed heads of cabbage and remove all loose outside leaves. Split the cabbage, remove the hard, woody core, and slice the remainder of the head with a kraut cutter or other hand slicing machine.

Beet tops: Tops of young beets in suitable condition for greens should be selected and washed carefully. Both the leaf stalk and blade should be cut into sections about one-fourth inch long and spread on screens and dried.

Swiss chard and *celery* should be prepared in the same way as beet tops.

Rhubarb: Choose young and succulent growth. Prepare as for stewing by skinning the stalks and cutting into pieces about one-fourth inch to one-half inch in length and dry on trays.

All these products should be "conditioned" as described.

Raspberries: Sort out imperfect berries, spread select berries on trays, and dry. Do not dry so long that they become hard enough to rattle. The drying should be stopped as soon as the berries fail to stain the hand when pressed. Pack and "condition."

Sweet clover will grow on practically all soil types to be found in this country, provided the soil is not acid and is well inoculated.

ROOT-APHIS SAPS CORN.

Cultivation and Repellents Effective Against This Enemy and Its Ally, the Brown Ant.

The corn root-aphis attacks the roots of corn throughout the States east of the Rocky Mountains, especially in the corn belt, but also in the South Atlantic States. Its presence frequently is not suspected because it passes almost its entire life underground. This aphis is a small, stout, soft-bodied, whitish insect and may be seen in infested fields by pulling up an unhealthy corn plant and closely examining the roots and surrounding soil. A small brown ant which works in conjunction with this pest cares for the eggs of the aphis over winter, and in the spring, when the eggs hatch, the young aphids are carried out and placed in contact with the roots of certain wild plants, such as smartweed. If corn is planted in such infested places, the ants transfer the aphids to the roots of the corn plants. The aphids sap the corn of its nourishment and often cause heavy loss to the crop.

Since this pest always is found with the ant, measures of combating it must take into account both these insects. Entomologists of the United States Department of Agriculture recommend timely cultivation and repellents as the best measures to destroy or drive away these enemies. It is too late to apply the plow-before-planting remedy, but if it is necessary to replant early injured corn, the field should be plowed deeply and thoroughly and then given three or four deep diskings at intervals of 2 or 3 days. These practices necessarily involve additional labor, but they prevent root-aphis injury and also put the field in much better physical condition.

Early fall plowing, followed by frequent deep disking in fields damaged by root aphids, is a good practice from the standpoint of community control, and also has its advantages to the individual farmer because the plowing disturbs the ant colonies, kills many of the aphids, and destroys the weeds upon which they live. The disking also prevents the recolonization of ants and prevents the growth of weeds, thus reducing the number of aphid eggs.

If it is impossible to practice cultivation measures repellents may be used to advantage. Repellents are best applied at planting time. The object is to repel the ants by the use of an odorous substance offensive to them, thus preventing them from colonizing the aphids on the corn roots and driving them from the treated fields. The measure is

intended only to drive away the ants, the presence of which is essential to the life of the aphids. Materials that may be used for this purpose are oil of tansy, tincture of asafetida, oil of sassafras, anise oil, kerosene, and oil of lemon. One of these is mixed with a chemical fertilizer, such as bone meal, and applied at planting time by means of a planter equipped with a fertilizer attachment. It should not be applied directly to the seed, as such treatment may injure it, especially if the season be wet. One-fourth of a pound of oil of tansy should be diluted with 2 quarts of alcohol and 1 quart of water, and 2 pints of asafetida be diluted with 1½ gallons of water. Either repellent in this quantity thus diluted is sufficient for 100 pounds of bone meal, this amount being enough for 1 acre.

PREPARE NOW FOR THE SCHOOL PIG.

Country schools which have land capable of bearing crops can assist food production and school work by putting that land in fall forage crops for a school pig. The school pig has been a success in schools as a practical example of home projects and club work. Purchased by subscription or donated, fed largely on garbage and on forage crops grown on the school ground his sale at the end of the school year meant new books, pictures, or some other improvement for the school. Those schools which have had pigs found an added interest in club work, especially pig clubs, among the children. Attendance improved; lessons were studied because more interesting. Practical principles of agriculture were brought more vividly before the children. The parents and patrons of the schools became greatly interested and a more neighborly community spirit developed, which often resulted in progressive community actions.

A school planning to have a pig should prepare now. The land available should be plowed and planted this summer to some fall forage crops. The advantages of forage crops are many, and if there is enough land several different crops can be planted and the pig grazed in rotation on them during the fall. Cowpeas, soy beans, and rape make good fall pastures. Rye planted early is another. There are various other fall forage crops for hogs suitable for certain sections of the country. Instructions for planting and handling these crops can be had from the county agent, State Agricultural College, and the United States Department of Agriculture.

HOGS ON THE FARM.

Ideal Conditions for Hog Raising on the General Farm—Profitable Use for Waste Products.

Swine are profitably grown in practically every locality and on almost every type of soil in the United States. Although the most heavily stocked region is found in the corn belt, the East and the South are increasing the number of their swine at a rapid rate, very largely because of the use of pasture crops to replace part of the grain ration. In fact, hogs are grown under many different methods of farming and fed upon a great variety of crops, showing that they are well adapted to almost any condition found upon the farms of this country.

An ideal location is on a well-drained farm possessing a rich soil that will produce grasses and other forage as well as the grains needed for fattening the hogs. This does not mean, however, that only those farmers holding rich, level lands should raise hogs, for, as a matter of fact, hogs are most easily handled on farms that are somewhat rolling. For the production of forage crops the rolling farm is often as good as the level one, and frequently has the added advantage of shade and a better water supply. The hill farmer does not have the best of it in all things, but in many instances he has certain advantages which he does not appreciate.

In locating, the question of a market also must be considered, and the facilities for reaching it. Most communities are connected with the large central livestock markets by the railroads, but these will be of little avail if the roads to the railroads are poor. Good roads are of inestimable importance, for, among other things, they enable the farmer to market his products at any and all times.

The number of hogs for each farm must be determined by a study of local conditions and the type of farming. The maximum number of hogs per acre is found on farms chiefly or wholly devoted to the raising of that class of stock; as, for example, farms in the State of Iowa, where it is quite common to see farms stocked with several hogs to the acre, while the average for the entire State is 1 to every 3 acres of improved farm land. Under average conditions in this country, however, hogs return the largest profit when raised to utilize waste products, and when kept for this purpose alone the number will depend upon the quantity of waste products to be consumed. Skim milk from dairy herds, shattered grain from grain fields, unmarketable products from the truck farm, undigested grain in the droppings of fattening steers, and many other minor wastes on the average farm are examples of feedstuffs which would be wasted were it not for their utilization by the thrifty farmer for the production of pork.

In order to utilize some of these products it is necessary to have a number of pigs on hand for a relatively short time on account of the perishable nature of these feeds. The rest of the year the fattening pigs and the breeding stock must be maintained upon feed raised expressly for their consumption, and while they are not kept at a loss during this time, still the greatest profit is derived when they are eating the cheap feed in the form of waste products. The number of hogs which can utilize the waste to the best advantage, therefore, should be the limiting factor in determining the number of hogs to the farm. On farms in the corn belt, where hogs are raised simply to market the corn crop on the hoof, the number is controlled by the amount of corn which can profitably be raised to fatten them.

PLOW LATE FOR BILLBUGS.

In Lowlands of Southern Sections Corn Is Liable to Injury by These Insects.

Corn planted in river and creek bottoms or other low places, especially in southern parts of the country, is liable to injury by billbugs, snout beetles, or "elephant bugs," as they are variously termed. These hard-shell beetles live normally in sedges, rushes, or the large wild grasses that grow in moist, low ground, from which they may invade cornfields. Damage is done to corn by the grubs or young of the beetles which live inside the stems or roots of the plants and eat out the central portion of the stalk, causing stunting and serious injury. The adult beetles also injure the crop by puncturing the growing point or "bud" of a plant.

Land infested with billbugs should always be plowed in late summer or early fall. This measure, entomologists in the United States Department of Agriculture say, destroys the winter quarters of the bugs. Corn should not be followed by corn in the Atlantic Coastal Plain region of the South, but should be alternated with cotton, on which the billbugs can not live. It is necessary to destroy all sedges, rushes, chufa, or large swamp grasses growing on land intended to be planted to corn, because these plants are the natural food of billbugs and when present prevent their extermination.

BROOD SOW AND LITTER.

Exercise Necessary—Value of Pasture Crops—Pasture and Grain Required.

The brood sow suckling her litter should be well fed in order to give a maximum milk flow. Gains in live weight made by the pigs at this time are usually the cheapest ones during their whole lives, and any factor which will increase the sow's milk yield or cheapen the cost of her feed during these weeks will increase and cheapen the gains made by the suckling litter.

After the sow has farrowed it is best for her to be in the open air, say specialists in the United States Department of Agriculture. Of course, if the pigs are farrowed during the winter months, care will be needed, and it may be necessary to let the pigs reach the age of 2 weeks before turning them out. They can, however, get considerable exercise in the piggery or in the lot with the sow, and there is often a lot adjoining the barn that is sunny and sheltered from cold winds, where the sow and pigs may be turned for exercise. Care should be taken, however, not to allow the very young pigs to run out during a cold rain. On the other hand, if they do not exercise they will get fat and lazy, and the usual result is the "thumps." If the mother does not have plenty of exercise she is apt to become constipated, and in consequence fall off in her yield of milk.

Whenever available, green forage meets many of the requirements of a brood sow and her litter. It can be had at any time during the growing season in some form, from early spring pasture, such as fall-sown rye and wheat, to late fall or winter pasture composed of cereals sown a month before grazing. A pasture gives the sow ample opportunity to exercise in the open air. It also furnishes an abundance of succulent feed, which is conducive to a good state of health and consequently a large milk flow. If for no other reasons than these, it would be an economical practice to supply green forage to the sow at this time, but there is also an added advantage in that it saves grain and consequently reduces the cost of feeding.

Some grain should always be fed even on the richest of pastures. As a rule 2.5 pounds of grain for each hundred pounds the sow weighs will be sufficient when there is an abundance of pasture; without pasture from 3 to 4 pounds of grain per hundred pounds live weight will be required. Of course, if the sow loses much weight in either case her feed should be increased, or if she shows a tendency to put on fat decreased. No set formula can be given, for sows vary to a great extent in their milking tendencies, but the aim should be to keep her at a constant weight and in health. From six to eight sows and their litters can be carried on an acre of pasture for 6 weeks and the saving in grain is a very material one, ranging from $20 to $30 per acre at the present prices for feed.

Pasture Crops.

The soil and the season have a very great influence on the growth of the pastures, but there is such a large margin of profit in favor of their use that even under very poor conditions it pays to have them. For the spring pigs, wheat or rye, fall sown, and grazed when about 8 inches high, furnishes the earliest pasture. Oats combined with rape or Canadian field peas, spring sown, will be available during the latter part of May in the latitude of Washington, and will carry a few more sows per acre than the crops previously mentioned. Permanent pastures, such as bluegrass or alfalfa, may be used, but care must be exercised to prevent too close grazing early in the season. When supplementary pasture crops are used, they may be pastured to the ground, but such a practice would seriously damage permanent pastures so early in the year.

The problem of pastures for the fall pigs is easier, for there is a large variety of crops available at this time, such as clover, alfalfa, bluegrass, rape, soy beans, cowpeas, and many more, depending upon the locality. For very late pasture, after severe frosts have killed most vegetation, it is necessary to depend upon those crops which were used early in the spring, namely, wheat and rye. They may be seeded in August and furnish abundant forage until freezing weather, and if the sows are removed as soon as the growth has been checked, the spring growth will be as vigorous as if the crop had not been pastured the previous fall.

Hence, to give the little pigs the very best and cheapest start in life, run the old sow on pasture; the pigs will gain as well as or better than if she were fed an exclusive grain ration, all of them will be in the best state of health, and the saving in grain will be very noticeable, especially with corn and mill feeds at their present prices.

CONTROL OF GRAPE-BERRY MOTH.

Methods for the control of the grape-berry moth in the important Erie-Chautauqua grape belt of New York are described in Department Bulletin 550 of the United States Department of Agriculture, recently published.

PERISHABLE FOODS.

Unusual Care Urged in Preventing Fruits and Vegetables from Spoiling.

Shippers at this time should exercise unusual care in packing and loading their perishable products. They should grade their products carefully with reference to the degree of their maturity and select a near-by market for the riper products and a distant market for the products that will hold up the necessary time in transit to reach the distant market. Weather reports should be utilized in a study of the weather conditions that are prevailing in the different large markets, to the end that foodstuffs that normally are consumed in large quantities in warm weather may not be sent to markets where cool or cold weather is prevailing.

There should be a fuller recognition of the joint responsibility of the shipper with the carrier for the safe carriage of food products to destination, the specialists of the United States Department of Agriculture point out. Shippers should cooperate closely with carriers by giving ample instructions with reference to refrigeration and ventilation, to the end that food products may be properly conserved in transit and reach channels of consumption. Railroad agents could render useful service if they were instructed in some of the most fundamental things connected with the proper care of perishable shipments during the period of loading carload shipments at country stations.

Shippers too frequently, through carelessness and a lack of knowledge of the proper methods of protecting perishable shipments, leave wagonloads of them exposed to the hot sun for hours at a time instead of loading them promptly into a refrigerator car and keeping the doors of the car closed between loads. The carrier's representative or local agent usually takes notice of such condition only for the purpose of recording the circumstances for consideration in connection with damage claims that may be filed. The fact frequently is overlooked that the carrier may render definite assistance in the conservation of foodstuffs by cooperating with the shippers and giving them all the information which it has as to the proper methods that should be used.

Shippers should invariably notify consignees as soon as shipments are forwarded from point of origin. Where the distance to market is short, the notification should be given by wire, so that the consignees may be in a position to take more prompt delivery of shipments on ar-

rival and thus eliminate the deterioration that so frequently takes place by the holding of shipments long periods of time after arrival at the market.

TICK ERADICATION.

Ticks Cause Heavy Losses in the South by Decreasing Meat and Milk Production.

Tick eradication should be given an important place among the measures to be taken by southern communities to meet existing conditions. An increased supply of meat is one of the country's most urgent needs; and the South can not do its share toward furnishing this increased meat supply until the tick has been put out of the way.

The United States Department of Agriculture says it is proved every day in the South that beef cattle that are being robbed of blood by ticks will not grow or fatten properly, and that milch cows subject to the same drain give only scanty supplies of milk. They can not efficiently turn into food for soldiers and civilians the hundreds of pounds of grass, hay, and grain which they consume. They are wasters, made so by the ticks that feed on them.

These are animals that live in spite of the cattle-fever germs which ticks inject with their bites, and there is the added loss to be charged against ticks of the cattle which die from fever; and their number reaches into the thousands.

Now that each pound of meat and each glass of milk takes on an added value among the Nation's resources, more cattle must be raised and each animal must be made to put on as great a weight of meat or yield as much milk as is economically practicable. If this is to be accomplished in the South, the first step must be a drive against ticks. The methods for getting rid of these expensive pests are well known and are already being made efficient use of in many southern communities. Dipping vats filled with solutions that will destroy the ticks on cattle, and public interest which will insist that all cattle be dipped are the essentials, and when these have been acquired in a community a new day for cattle production is sure to dawn. Cattle that have been freed from ticks and kept free, as they may be at small cost, put on weight rapidly and make cattle raising among the abundant feed supplies of the South a truly profitable enterprise.

The large number of failures in obtaining a stand of sweet clover are due primarily to acid soils, lack of inoculation, and seed which germinates poorly.

COTTAGE CHEESE.

Some Ways to Use Cottage Cheese in Making Tasteful and Nutritious Dishes.

Cottage cheese is richer in protein than most meats and is very much cheaper. Every pound contains more than 3 ounces of protein, the chief material for body building. It is also a valuable source of energy, though not so high as foods with more fat. It follows that its value in this respect can be greatly increased by serving it with cream, as is so commonly done.

Cottage cheese alone is an appetizing and nutritious dish. It may also be served with sweet or sour cream, and some people add a little sugar, or chives, or chopped onion, or caraway seed.

The following recipes illustrate a number of ways in which cottage cheese may be served:

Cottage Cheese with Preserves and Jellies.

Pour over cottage cheese any fruit preserves, such as strawberries, figs, or cherries. Serve with bread or crackers. If preferred, cottage-cheese balls may be served separately and eaten with the preserves. A very dainty dish may be made by dropping a bit of jelly into a nest of the cottage cheese.

Cottage-Cheese Salad.

Mix thoroughly 1 pound of cheese, 1½ tablespoonfuls of cream, 1 tablespoonful of chopped parsley, and salt to taste. First fill a rectangular tin mold with cold water to chill and wet the surface; line the bottom with waxed paper; then pack in three layers, putting two or three parallel strips of pimento between layers. Cover with waxed paper and set in a cool place until ready to serve; then run a knife around the sides and invert the mold. Cut in slices and serve on lettuce leaves with French dressing and wafers. Minced olives may be used instead of the parsley, and chopped nuts also may be added.

Cottage-Cheese Rolls.

A large variety of rolls to be used like meat rolls, suitable for serving as the main dish at dinner, may be made by combining legumes (beans of various kinds, cowpeas, lentils, or peas), with cottage cheese and adding bread crumbs to make the mixture thick enough to form into a roll. Beans are usually mashed, but peas or small Lima beans may be combined whole with bread crumbs and cottage cheese, and enough of the liquor in which the vegetables have been cooked may be added to get the right consistency; or, instead of beans or peas, chopped spinach, beet tops, or head lettuce may be added.

Boston Roast.

1-pound can of kidney beans or equivalent quantity of cooked beans.	½ pound cottage cheese.
	Bread crumbs.
	Salt.

Mash the beans or put them through a meat grinder. Add the cheese and enough bread crumbs to make the mixture sufficiently stiff to be formed into a roll. Bake in a moderate oven, basting occasionally with butter, or other fat, and water. Serve with tomato sauce. This dish may be flavored with chopped onions, cooked in butter, or other fat, and a very little water until tender.

Pimento and Cottage-Cheese Roast.

2 cupfuls cooked lima beans.	5 canned pimentos, chopped.
¼ pound cottage cheese.	Bread crumbs.
	Salt.

Put the first three ingredients through a meat chopper. Mix thoroughly and add bread crumbs until it is stiff enough to form into a roll. Brown in the oven, basting occasionally with butter, or other fat, and water.

Cottage-Cheese and Nut Roast.

1 cupful cottage cheese.	1 tablespoonful butter.
1 cupful chopped English walnuts.	Juice of half a lemon.
1 cupful bread cumbs.	Salt and pepper.
2 tablespoonfuls chopped onion.	

Cook the onion in the butter or other fat and a little water until tender. Mix the other ingredients and moisten with the water in which the onion has been cooked. Pour into a shallow baking dish and brown in the oven.

Cheese Sauce.

1 cupful milk.	2 tablespoonfuls flour.
1 tablespoonful cottage cheese.	Salt and pepper to taste.

Thicken the milk with the flour and just before serving add the cheese, stirring until it is melted.

This sauce may be used in preparing creamed eggs or for ordinary milk toast. The quantity of cheese in the recipe may be increased, making a sauce suitable for using with macaroni or rice.

Sheep are excellent weed destroyers, as they keep the weeds nibbled so closely that no seeds are formed and the roots are exhausted. A small flock of sheep is an excellent scavenger on almost any farm, and they make profitable use of waste land, provided that dogs and internal parasites can be controlled.

ANALYZE GARBAGE.

Waste of Human Food and Stock Feed Revealed Will Lead to Immediate Reforms.

"Have your city food chemist analyze your city garbage from week to week and publish prominently what he finds as an index of food saving or waste in your community" is the suggestion the United States Department of Agriculture is making to municipal authorities throughout the country. Where there is no official chemist, the department points out, local chemists capable of determining percentages of fats, protein, starch, and organic matter wasted in garbage can render great service to the Nation by volunteering to make these analyses in their localities.

Vast amounts of bread, meat, and edible fats are wasted in garbage and tons of valuable foodstuffs for animals are lost to the food supply of the Nation by usual garbage reduction or disposal methods. One of the first results from the careful analysis of city garbage should be the passage or more rigid enforcement of garbage-collection ordinances, requiring that no glass, tin, wood, burnt matches, paper, string, or inorganic trash be mixed with the vegetable material, meat scraps, or bones which can be used for feed.

This dual collection of garbage and trash is being rigidly enforced by Germany in all cities of 40,000 people. Garbage so collected from a population of 17,000,000 people in Germany, although the German garbage pail always has been far leaner than the American one and is especially light at this period, furnished briquettes rich in protein, which when fed to dairy cattle produced 1,500,000 to 2,000,000 quarts of milk daily.

In most American cities, however, garbage is sent to reduction plants, where all the fat and oil it contains is recovered for use in making soap or greases. The residue, after the oil is extracted, is used as fertilizer or dumped into the ocean. This practice has been highly profitable, because the American garbage pail is very rich in fat, American garbage averaging 3 per cent of fat, while German garbage rarely shows even 1 per cent of fat, as the German people never have been wasteful of animal or other fats. Another reason for the use of the reduction method is that in many cities ordinances prevent the use of garbage for feeding animals, particularly dairy cows, although there is no valid hygienic objection to the use of dried and properly sterilized garbage as food for cattle or hogs.

The specialists of the United States Department of Agriculture believe that as the thrift idea gains ground less and less fat will be thrown into the garbage pail, and are hopeful that the time is not far distant when the amount of fat will make reduction for the recovery of oils hardly worth while. This will mean that a lot of excellent and valuable foodstuff now being wasted as food will never get into the garbage pail. Even when all fat is eliminated, however, and waste of bread and cereals and meat has been reduced to a minimum, the garbage pail nevertheless will contain, in the form of parings, plate scraps, and trimmings, a vast amount of material which should be conserved and used as feed for hogs, cattle, or poultry. First, however, the people must face the facts and know the truth of their waste, and in bringing this waste home local chemists can render effective service.

CORN IN PLACE OF WHEAT.

To eat more corn and less wheat is a simple way, which everyone can adopt, to help in feeding the allies across the seas. Corn is a distinctly American product. We raise approximately two-thirds of all that is grown in the world; we are accustomed to it, and we know how to prepare it for the table. In Europe, with the exception of Italy, Austria-Hungary, and Rumania, it is almost unknown, and many people do not know how to cook corn meal and similar products. We can use our corn to much better advantage here than they can abroad; and the more corn we do use the more wheat, rye, and barley will be available for export.

Corn meal costs less than the other popular cereals, and its nutritive value compares favorably with that of wheat. It is somewhat deficient in protein or tissue-building material, but this characteristic is not so marked in the case of the old-fashioned unbolted meal. Those who prefer this can obtain it readily by grinding the corn themselves at home in a hand gristmill.

The Secretary of Agriculture has appealed for an expansion of the corn acreage on the ground that corn is the leading feed and food crop of the United States, and that it can be grown successfully over a greater area than any other. Undoubtedly farmers will act on this advice. If the consumers do their part as well, there will be that much more wheat available for export.

Detailed suggestions for the use of corn in making bread and in other ways can be had from the United States Department of Agriculture upon request.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

REPLANT GARDEN SPACE

Home Gardeners Should Plan to Follow Early Harvested Crops with Other Vegetables.

Now that radishes, lettuce, and, in some sections, peas, spinach, and other early crops are being harvested, home gardeners should be making their preparations to utilize the freed space by planting other crops, say specialists of the United States Department of Agriculture.

In planning for these plantings, the specialists suggest, it is well at all times, but especially this year, to concentrate efforts on the production of vegetables that have considerable food value and on those which may be stored in their natural condition, dried, or canned for winter use. One of the important crops that can be grown on the freed ground is late Irish potatoes. Navy beans furnish substantial food which is easily stored, and the present market prices make it worth while in sections where they thrive to replant space from which crops have been harvested with this legume.

Other vegetables having considerable food value from which choice may be made for late plantings include sweet corn, string beans, late beets, turnips, tomatoes, squash, and pumpkins. As far north as northern New Jersey, southeastern Pennsylvania, central Ohio, central Indiana, northern Illinois, and central Iowa, sweet potatoes also may be depended on to mature from plantings made as late as June 10 on sandy land.

Among the less nutritious vegetables which may be planted in soil freed by early harvests are late cabbage and cucumbers. Winter onions, fall lettuce, and fall radishes also may be planted late in the season.

It is not essential, the specialists point out, to wait until all radishes, heads of lettuce, and other early maturing plants are removed before planting seeds or setting plants for succeeding crops. Corn or beans, for example, may be started in spaces made in radish or lettuce rows, or between the rows. The radishes or lettuce will then be harvested before the late-planted crops need all the ground. Equally satisfactory results can be obtained from the combination of other early and late vegetables.

Many housewives who complain that children and adults will not eat breakfast cereals fail to realize that the cereals they serve may be undercooked, scorched, or improperly seasoned, and thus made unpalatable Most of the cheaper foods require careful seasoning and preparation to be fully appetizing.

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JUNE 20, 1917. No. 46

UNDERGROUND ENEMY.

Lessen Damage by Wireworms Through Careful Tillage, Better Drainage, and Rotation of Crops.

Because the destructive wireworms work entirely underground, they are among the most difficult to control of all the insect foes of corn and cotton. Much may be done, however, to lessen their ravages by careful tillage, drainage, and proper rotation of crops, and entomologists of the United States Department of Agriculture tell how these measures can be put into effect.

Wireworms are the young of the common snapping-beetles or click-beetles, and the worms are yellowish or brownish, highly polished, and slippery to the touch. They move actively and disappear rapidly when brought to the surface by the plow or spade. The eggs are laid in the ground, usually in the sod lands, and here the young worms are hatched. Three years are required for most kinds of wireworms to get their full growth and become beetles.

Where sod land is to be planted to corn the following year, the land should be plowed immediately after the first cutting of hay, usually early in July, and should be cultivated deeply during the rest of the summer. When it is practicable, other crops not severely attacked by the wireworms, such as field peas or buckwheat, should be grown on such land before corn. This practice will materially reduce the number of wireworms in the soil..

Land already in corn, which is badly infested, should be cultivated deeply even at the risk of slightly root-pruning the corn. This should be continued as long as the corn can be cultivated, and if wheat is to follow, the field should be tilled thoroughly as soon as the corn crop is removed.

In regions where wheat land is seeded down for hay, any treatment of infested fields is precluded. Where the wheat is not followed by seeding to other crops, the fields should be plowed as soon as the wheat is harvested. Plowing kills the worms by destroying their food supply and preventing them from preparing suitable quarters for the winter.

Some kinds of wireworms live only in land that is poorly drained, and for this reason tile draining of land is beneficial, especially where the general condition of the field is further improved by applications of lime and by thorough cultivation.

In the Northwest and northern Middle West the dry-land wireworm is sometimes very injurious. The following methods have been found to be valuable in the eradication of this pest: (1) Disk or drag-harrow the summer fallow as soon as possible in the spring, in order to produce a dust mulch and thereby conserve the accumulated winter moisture; (2) continue the disking as often as is necessary in order to maintain the mulch and keep down the weeds; (3) plow the summer fallow in July or early in August and immediately drag; (4) plow the stubble as soon as the crop is removed.

Farmers' Bulletin 725 contains additional information on wireworms and will be mailed free of charge on application to the Secretary of Agriculture, Washington, D. C.

Wild carrot is a biennial or two-year plant ordinarily; that is, it normally blossoms and produces seed the second year after germination and then dies. Occasionally a plant matures seed the first year, or, on the other hand, it may live for several years if seeding is prevented each year. The root is of the tap-root type and does not spread, hence the plant is propagated only by its seeds. For this reason the weed can be exterminated if seed production is prevented.

THE point has been reached where war is waged literally by whole nations. Every man, woman, and child is involved, and nearly every adult and most boys and girls can be efficient factors. We are in this war for the purpose of defending our rights, of making sure that, as a Nation, we shall be able to live the sort of life and to have the sort of institutions we desire, of making democracy persist in the world, and of safeguarding the world against the recurrence of such a war as this. To accomplish this, the Nation must aim at the perfection of organization, and therefore each individual must recognize the necessity of making sacrifices for the common good and more than ever of working under limitations—of doing team work. Our people have a genius for organization and they will not fail in the task they have assumed. Our farmers, on whom a great responsibility rests, are the most efficient farmers in the world when they do their best. They will not be found wanting in this crisis.—David F. Houston, Secretary of Agriculture, June 12, 1917.

SOY BEANS FOR SEED.

When to Plant North and South—Varieties Suited to Regions—No Danger of Overproduction.

Farmers north of the Potomac and Ohio Rivers may well plant a much larger acreage to soy beans for seed, according to the United States Department of Agriculture. In view of the present and prospective high prices of soy beans for food and manufacturing purposes, there is no likelihood of overproduction this year. The soy bean also is a soil improver, and the straw is valuable for feeding purposes.

As a seed crop the soy bean should be planted about June 1 in the North. However, in the southern part of the central States plantings may be made as late as June 15. Where clover or grass has winter-killed, the soy bean may be planted to good advantage.

Varieties with yellow seeds are preferred by food manufacturers. The Ito San is the earliest maturing yellow variety available and yields well in Wisconsin, Michigan, northern Indiana, Ohio, Massachusetts, Rhode Island, and Connecticut. In the central and southern parts of the Northern States the Medium Yellow, Mongol, and Mikado are more desirable sorts. Considerable quantities of seed of these varieties are still available for planting.

Northern farmers should be particularly careful not to plant the Mammoth variety of which much seed is in the market in the North. This variety, also known as Late Yellow, Southern Yellow, and Virginia Yellow, will not mature north of the Potomac and Ohio Rivers.

Planters south of the Potomac and Ohio Rivers still have ample time to plant soy beans for a seed crop, and it offers them at the present time one of the best cash grain crops to supplement cotton.

South of the Potomac and Ohio Rivers excellent results may be obtained by planting after winter grain and early potatoes are removed, according to the United States Department of Agriculture. In such instances the land need only be thoroughly disked to secure a suitable seed bed. Late varieties, as the Mammoth, may be planted as late as June 15 to 20 and mature good yields of seed. Early varieties, such as Ito

San, Medium Yellow, Mikado, and Mongol, may be planted in the cotton belt as late as July 15 and still mature the crop for seed.

Since the yellow-seeded varieties are preferred by food manufacturers, the Mammoth Yellow is especially adapted to the Southern States for seed production. Considerable quantities of seed of this variety are still available for planting.

The soy bean already has reached a place of high economic importance in America and Europe as a foodstuff. The seed of the soy bean, unlike that of the cowpea, rarely is attacked by the weevil or other grain insects. Even where the oil is extracted, the resultant meal is a very desirable food. During the present season the demand for seed by food manufacturers has resulted in greatly increased prices. In view of the large demand, production in excess of requirements is very improbable, and this season's crop undoubtedly will command profitable prices. The soy bean also is a soil improver, and the straw is valuable for feeding purposes.

WEANING LAMBS.

How to Treat Lambs and Care for Ewes at Weaning Time.

Lambs kept for breeding stock should be weaned when from 4 to 5 months of age. The lambs intended for market, on the other hand, should attain marketable weights before they are 5 months of age and should be weaned at the time they are sold.

Lambs at weaning time should be kept for four or five days at least on the old pasture, as they do not fret as much as in a strange place. The ewes should be removed to another pasture as far away as possible from the lambs. If the feed on this pasture be a little scant, so much the better, for this will help check the milk flow. The ewes and lambs should not be turned in together again, for a large amount of milk from a ewe that has not been suckled for two or three days is liable to cause digestive disturbances in the lamb.

At weaning time the ability of a ewe to produce a good lamb is often ruined because the necessary care is not taken to see that she is dried off properly. A little care at this time will be well repaid. Two or three days after the separation the ewes should be milked out. All of the milk need not be drawn from the udder, but enough should be taken to leave the udder soft and pliable. Mark with colored chalk ewes needing no further attention. In about three days the ewes should be milked out again and the drys marked. Further attention should be given four or five days later to those not dry. No effort should be spared to maintain every breeding animal in a sound and useful condition.

GIVE BEES ROOM.

Much Honey Lost Through Failure to Furnish Storage Room on Time.

Many beekeepers make a serious mistake in failing to give their bees enough storage room on time. The addition of this room at just the right time for the storage of the season's crop of honey requires good judgment and an intimate knowledge of the nectar resources of the particular locality and season. Very few people realize that in many localities the entire season's crop of surplus honey is gathered and stored within a period of a few weeks. It is exceedingly important during these few weeks that the progress of the work in the supers be watched closely and additional room be given as rapidly as the bees can use it.

The usual procedure by the inexperienced beekeeper is to put on a super of 25 to 50 pounds capacity during early spring and give the subject no further thought until late summer or autumn. If the super is found to be full of honey at that time it is removed and probably an empty one put in its place. In many cases this empty super is given long after there is any possibility of any further storage of honey during the season, and if comb honey is being produced the sections and foundation are ruined for further use by being on the hives during a time when no honey is being stored.

During a poor season a single super for each colony may furnish an abundance of room for the storage of the entire crop of honey, but, during a good season, if additional supers are not given as needed, the major portion of the crop is lost to the beekeeper simply from lack of storage space.

In comb-honey production the standard supers contain, when filled, only about 25 pounds of honey. During a rapid honey flow, such as occurs some seasons, especially in the Northern States, sufficient progress is frequently made in each newly added super to justify the addition of another every 3 or 4 days. With such a honey flow several supers may be completely filled with honey before any of it is ripened and sealed and the hive may have therefore as many as 5 or 6 supers at one time. Under such conditions, if the bees are compelled to ripen and seal the honey in the first super before a second one is given, most of the possible honey crop is lost to the beekeeper, the bees being compelled either to swarm or to loaf during the height of the storing season. Such an abundant honey flow does not by any means occur every year, but when it does occur the beekeeper should be prepared to take full advantage of the opportunity.

Bees need so little attention during the greater portion of the year that it is difficult for the inexperienced beekeeper to realize that for the best results almost daily attention is needed during the few days or weeks known among beekeepers as the honey flow. A more complete discussion of this subject is given in Farmers' Bulletin No. 503, "Comb Honey," which may be obtained on request from the United States Department of Agriculture.

PREVENT DISEASE IN STOCK.

Sanitation and Good Feeding Methods Help Reduce Losses.

Proper feeding and sanitation are two important preventives of disease losses in farm animals. If carefully applied these measures may prevent many losses of meat animals. Keep the animals sturdy and disease-resistant by feeding a good, wholesome diet. Young animals need particular care and should be kept growing. A balanced ration should be fed—one that contains enough digestible protein to supply the needs of bone and muscle growth.

The farmer should carefully consider the food requirements of his animals, as has been shown by the State experiment stations, in standard farm-animal books, and by the United States Department of Agriculture. Green feeds have a tonic as well as nutritive value and should be used wherever possible. With some feeds care must be used in feeding to avoid parasitical infection and the infection of such diseases as tuberculosis. Old pastures and milk used as a feed are examples of possible sources of disease to sheep and hogs, respectively. Pure water is another essential to animal health. Animals should not have access to water which may be contaminated, such as streams passing through infested farms above, pools drained from barn lots, and so on.

Two naturally hygienic factors are fresh air and sunlight. Pure fresh air constantly available to an animal reduces the possibility of lung trouble. Impure air reduces an animal's resistance to disease by failing to supply the oxygen necessary for the purification of the blood. Sunlight is a natural germicide and will keep animal surroundings free from disease germs. All buildings for housing farm animals should be well ventilated and have plenty of sunlight reaching to all parts of the building at some time during the day. When

weather permits, the animals should be kept outside as much as possible. Yards, lots, pens, and buildings should be kept clean, and may be made freer of disease by the use of lime and standard disinfectants. Whitewashing the inside of buildings, scattering lime over the ground and floor, and spraying with disinfectants those places accessible to animals but inaccessible to sunlight will aid sanitation and promote the welfare of the farmer.

ROADSIDES FOR PASTURE.

Some Can Be Used to Produce Hay—Fine Pasturage Often Wasted.

Many thousands of miles of roadsides are on productive soil and should be used for food production. To use the roadsides will involve little labor and no large expenditure.

Some roadsides can be used to produce hay. Such crops as sweet clover, red clover, and grasses are often found growing rankly along the roads and can be cut for hay. These crops are usually allowed to waste, though some farmers utilize them. One farmer in Missouri always cuts the sweet clover from roadsides adjacent to his farm before it gets woody. Along limestone roads clover often grows more rankly, owing to the sweetening effect of the road dust on the soil acidity. On some roadsides, by a little seeding or by clipping the weeds, the more valuable hay crops can be produced.

Pasturing the roadsides usually offers the best way of utilizing them. Many roadsides are too rough to be mowed, and farm labor is scarce. Many fine pasture plants grow along the roads. Bluegrass and white clover frequently take the roadsides, to the exclusion of weeds. Bermuda grass, Japan clover, and other plants of good grazing qualities are found along the southern roads. Wild grasses throughout other parts of the country are abundant along roads. The pasturage of roadsides can be increased by keeping the weeds down by mowing occasionally with a machine or scythe. The farm pastures can be rested and are not so liable to overgrazing when the roadsides are used. Pasturing the roadsides does not call for much labor. Cattle and sheep can be grazed along them and valuable beef, milk, wool, and mutton produced. The old milch cow may be tethered out, or the farm cattle, herded by children, pastured along the roads. The farm flock of sheep will need to be herded, but will clip the roadside more closely and retard the growth of noxious weeds. Farmers who use these waste spaces will help produce more food, eliminate waste, produce cheaper milk and meat, reduce weeds, remove a wintering place for insects, and in addition make the roadsides and farmsteads more attractive.

POISONOUS PLANT.

Look Out for Cicuta, Widely Distributed, Sometimes Fatal to Man and Domestic Animals.

Many deaths, both of human beings and domestic animals, are caused every year by cicuta, or water hemlock, a poisonous plant. It is the most violently poisonous of temperate-region plants, yet it is not generally recognized. Learn to know it and look out for it. A warning has just been issued by specialists of the United States Department of Agriculture in the form of a circular from the Bureau of Animal Industry, "Cicuta (Water Hemlock) as a Poisonous Plant," which describes this plant and gives remedies, though cases among domestic animals must be considered as practically hopeless so far as treatment is concerned.

Cicuta is widely distributed. Unfortunately, it resembles a number of harmless plants and is not easily recognizable. It belongs to the same family as carrots and parsnips. It has a number of popular names, of which the most common is "cowbane," or "water hemlock." In the mountain regions of the West it is frequently called "parsnip" or "wild parsnip." Other names less common, are "snakeroot," "snakeweed," "beaver poison," "muskrat weed," "spotted hemlock," and "spotted parsley."

The plant grows in wet places and is especially common in some parts of the West along irrigating ditches. It has a thickened rootstock with roots which sometimes take the form of a group of tubers. The cicuta is most readily distinguished from plants of similar appearance growing under the same conditions by the transverse chambers in the rootstock. These can be seen by making a longitudinal section. Further description, except by botanical terms, is difficult, but the circular mentioned presents illustrations that make recognition easier.

Only the root of cicuta is poisonous. Cases of poisoning are more frequent in the spring, partly because the roots are more likely to be noticed at that time and partly because they appear to be more poisonous then than later in the season. Occasionally stock find the roots when they are washed out by high water in small streams. Farmers in their plowing sometimes bring to the surface a considerable number of roots, and these are eaten by cattle, with resulting sickness and death.

In cases of the poisoning of human beings the recognized treatment is to give an efficient emetic, followed by a cathartic. Some form of opium may be given to control the convulsions when they are violent. If free vomiting is promptly produced, the patient is likely to recover.

It is obvious that ruminant animals can not be treated in this way, for the effective clearing of the stomach is impossible. While hypodermic injections of morphin may be used to aid in controlling the convulsions and a purgative may help in eliminating the poison, ordinarily the convulsions are so violent that nothing can be done for the animal.

So far as live stock are concerned, about all that can be done must be in the way of prevention. If the land is plowed where the plant grows, care should be taken that no roots are left where stock can get at them. Where the plants grow in great abundance, as they frequently do along irrigating ditches, it is desirable to dig them out. When this is done the roots should not be left on the surface, but should be destroyed. It is seldom that stock are poisoned when grazing, unless they graze along ditches, where the plants sometimes grow almost in the water with very little soil and can easily be pulled up.

Perhaps there is no way to prevent some cases of poisoning of children. Something might be accomplished, however, if parents and teachers would attempt to make clear to children the danger of eating strange roots.

PLANT PUMPKINS IN CORN.

Pumpkins planted in corn furnish a cheap appetizing stock feed. They should be planted by the latter part of June, putting a pumpkin seed in every sixth hill and in every missing corn hill. Pumpkins will affect but slightly the stand of corn and a large amount of fine stock feed can be raised.

Pumpkins are relished by cattle and hogs. Fed, uncooked and with the seeds, they act as an appetizer and corrective of digestive troubles. Two and one-half tons of uncooked pumpkins are equal to a ton of corn silage to cattle. It has been found that 273 pounds of grain and 376 pounds of pumpkins produced 100 pounds of pork, the pumpkins saving 100 to 150 pounds of grain. The low cost of growing, ease of keeping, large yields, and the tonic qualities of a succulent feed available when succulent hog feeds are scarce make pumpkins well worth while.

SAVE EWE LAMBS.

Save every ewe lamb possible for breeding is the urgent message the United States Department of Agriculture is sending to sheep owners. Market for slaughter only those absolutely worthless for breeding stock. There is a strong demand among farmers for breeding stock, and owners of ewe lambs should have no trouble finding a breeding market for them through county agents or the State agricultural colleges. Sheep specialists of the United States Department of Agriculture believe that although prices for breeding stock now are high, those who start production of wool and mutton on a moderate scale will have no cause to regret purchasing breeding stock at present figures.

CORN FLEA-BEETLE.

Means of Combating This Insect and Minimizing Damage to Crops in the Southwest.

The elimination of Johnson grass, salt grass, and Bermuda grass, the careful cultivation of corn after each irrigation, and the use of barnyard manure, or other fertilizer, are recommended as useful measures against the desert corn flea-beetle, in a new publication of the United States Department of Agriculture, Bulletin No. 436, by V. L. Wildermuth of the Bureau of Entomology. This insect has been found in considerable numbers in the southwestern United States, where it does much harm to corn, milo maize, sugar cane, Sudan grass, wheat, barley, and alfalfa. Corn and the sorghums probably suffer the most.

The adult beetle is almost as broad as it is long, and on a corn leaf appears as a tiny, nearly round object, about the size of the point of a lead pencil. In color it is a shiny black. The larvæ of the insect are small, delicate, and much elongated in shape. In color and texture they resemble the corn roots in which they feed. The adults, or beetles, generally make their appearance about the middle of February and a few weeks later they begin to deposit their eggs. These hatch usually in about six days. The larvæ which emerge from them begin at once to attack the roots of the near-by plants. As the adults feed chiefly upon corn, and therefore are very likely to lay their eggs in the cornfield, corn is the crop which suffers the most from the larvæ. These, however, also do great damage to alfalfa in fields which have been seeded to a grain crop during the winter.

The larval stage averages from 22 to 25 days. At the end of this period the insect constructs a little earthen cell in which it passes the pupal stage of its existence and from which it emerges as an adult or beetle. In a dry soil these cells are often formed at as great a depth as 4 inches below the surface, but in a moist soil they are much more likely to be very close to the top. For this reason the shallow cultivation of corn after each irrigation is recommended as an effectual means of destroying large quantities of insects. Such cultivation is beneficial to the crop as well.

The adults, which feed upon the leaves and not the roots of the crop, frequently pass the winter in the protection of rubbish and grass clumps in waste places. Ditch banks thickly grown up with Bermuda and Johnson grass are favorite spots. For this reason the cleaning up of Johnson grass, salt grass, and Bermuda grass will do much to prevent infestation later.

Cultivation and the destruction of their winter refuges are the most effective means of combating the pest on a large scale. Where only very small areas are affected, however, it is possible to resort to spraying with arsenate of lead. Two pounds of this should be used to 50 gallons of water which is combined with a strong soap solution.

The loss from the beetles may also be minimized by stimulating the crop to better growth through the free use of barnyard manure or other suitable fertilizer. In many sections in the Southwest it is believed that manure causes burning of the plants and contributes to the dispersing of weed seeds, and it is therefore not used. These objections, however, can be easily removed. If manure is thoroughly rotted and properly applied it will not burn the plants, and if rotation of crops is practiced there will be a minimum of complaint in regard to the dissemination of weed seeds. The use of manure enables the plants to make a good start and to continue in a thrifty condition in spite of the attacks of the flea-beetle.

EGG-LAYING RATION.

Good Results Obtained from Wheatless Ration for Hens.

With wheat so high, poultrymen will be interested to learn that on the United States Department of Agriculture experiment farm excellent egg-laying results were secured with a wheatless ration. Thirty Leghorn pullets to which this ration has been fed for 1½ years produced an average of 147.3 eggs per hen for the pullet year. This compares favorably with egg yields secured on other rations containing wheat an therefore more expensive. This pen, moreover, during the first 16 weeks of its second year has averaged 28.5 eggs per hen, 17.5 eggs per hen being produced in March.

The same wheatless ration has been fed since last November to a pen of Buff Orpington pullets, which have laid 53 eggs per hen in 20 weeks and hold the highest egg record of any of the large feeding pens of pullets at the farm this year. Two other pens, however, are less than 1 egg per hen behind this pen. The ration used was as follows:

SCRATCH MIXTURE.	DRY MASH.
2 pounds cracked corn.	3 pounds corn meal.
1 pound oats.	1 pound beef scrap.

The scratch mixture was fed sparingly, so that the hens ate about equal parts of this mixture and of the dry mash. The total grain consumption of feed for the year was 52 pounds, of which 26 pounds was scratch mixture. Throughout the year it took 4.6 pounds of feed to produce a dozen eggs.

This scratch mixture, with wheat $2.57, cracked corn $1.35, and oats 70 cents per bushel, is 49 cents per hundred pounds cheaper than the regular mixture of equal parts cracked corn, wheat, and oats. Another mash which is slightly cheaper than this one is made of 4 per cent each bran and middlings, 26 per cent beef scrap, and 66 per cent corn meal.

If the wheat is omitted from the ration, it is very essential to feed a considerable proportion of beef scrap in the mash, but with present prices beef scrap is one of the cheapest poultry feeds, considering its high protein content.

These experiments, the specialists say, prove that wheat is not essential in an egg-laying ration and that excellent results can be secured by using corn and oats as a scratch mixture, provided this is fed with a good mash containing 25 per cent beef scrap.

SAVE IN HARVESTING.

Assistant Secretary Vrooman Urges Prevention of Waste.

Conservation of grain through efficient methods of harvesting, including stacking wherever labor conditions permit, is recommended to farmers by Assistant Secretary of Agriculture Carl Vrooman.

"The Nation needs every head of grain that can be raised this summer," declared Mr. Vrooman. "Effort must be made to save every ounce of wheat, oats, and rye at the harvest. Each year hundreds, if not thousands, of bushels of grain are ruined in regions where midsummer rains occur, because it is allowed to remain on the ground a prey to the weather. Keep in mind that a bushel of wheat will furnish bread for one person for about 75 days.

"Harvesting machinery should be adjusted so that there is as little loss as possible in cutting. Care should be taken also to harvest all grain cleanly in the corners, along the edges of the fields, and in lodged spots.

"More than usual attention should be given to shocking in order that there may be as little waste as possible from exposure to the weather. If at all practicable, the grain should then be stacked as soon as it is cured in the shock. Stacks of bound or headed grain should be built carefully so that they will shed water. Every blade saved equals a blade produced.

"In threshing, special attention should be given to the adjustment of the concaves and of separating machinery, to make sure that none of the grain is lost with the straw and chaff."

Important amounts of perishable foods are made dangerous or inedible in households because they are exposed unnecessarily to heat, moisture, germs, dust, dirt, or to flies and other insects.

THINNING PLANTS.

Prevention of Crowding Makes for Better Yield and Quality—Advice to Home Gardeners.

Do not allow garden vegetables to crowd each other in drills or rows. This is a bit of timely cultural advice offered to home gardeners by specialists of the United States Department of Agriculture. Unless each plant has adequate room for development and a chance to receive all the sunlight, air, moisture, and plant food which it needs, the specialists point out, it will be stunted, and its contribution to the food supply of the family, therefore, will be low in quantity and inferior in quality.

It is well enough to plant seed more thickly than the plants should grow, to allow for faulty germination and losses, it is explained, but the mistake of allowing the crops to grow as thickly as they come up must not be made. A good time to thin out surplus plants is a few weeks after the plants have come up, when they have become large enough to show which are most thrifty and before they have begun to crowd seriously. Wherever possible, the thriftiest plants should be left.

In thinning lettuce and beets some of the best-rooted plants may be set out to fill up any spaces which may have occurred in the drills. Lettuce also may be permitted to grow fairly large before thinning and the surplus plants eaten. The plants should be from 2 to 3 inches apart at the first thinning, and before the plants crowd a second thinning should be made which will leave the plants from 6 to 8 inches apart. The plants removed at the second thinning should be large enough for table use. Garden beets should be gradually thinned to 6 or 8 inches apart, the plants pulled being used for greens. For this purpose the whole plant is used. Young turnips may be used in the same way.

Radishes usually are not thinned until they are large enough to be eaten. Radish tops also may be cooked as greens or, if especially tender, may be used in salads. If radishes have been planted to mark drills of parsnips, carrots, or other slow-growing vegetables, they should be removed before they crowd the permanent occupants of the drills.

Onions should be thinned before they reach a quarter inch in diameter and should be left about 3 inches apart.

Turnips, carrots, parsnips, and beets usually are left 3 to 6 inches apart. If they are to be harvested while fairly small, they may stand somewhat closer.

Thin hills of muskmelons and cucumbers to three or at the most five plants. Only two or three pole beans should be left to each hill.

In all thinning operations choose, if possible, a time when the ground is mellow, so that little damage will be done to the plants that remain. If the ground surface about the plants to be thinned is hard, wet it thoroughly long enough before operations are begun to allow the moisture to soak to the ends of the roots.

BROOD SOWS.

Summer Breeding, Feeding, and Management—Raise Two Litters a Year.

The practice of having brood sows produce two litters a year, as followed in some of the hog-raising sections of our country, should be encouraged, except where short seasons and severe winter weather prevent, the swine specialists of the United States Department of Agriculture advise.

Sows intended to farrow fall litters should be bred not later than the end of June. Those that are in breeding condition after weaning their spring litter should be bred the first time they come in heat. There are generally a few sows in the herd that are thin and run down in condition after weaning, and these should be fed a little heavier for a few weeks before breeding to insure a large litter in the fall. The date of breeding should be recorded so as to determine the date of farrow. The gestation period of a sow is 112 to 115 days. The sows should be watched closely to see if they come in heat after they are once bred, so that they can be rebred. The heat period is every 21 days.

After the sows are bred they should be turned into pasture and fed very little grain during the first part of the summer. Breeding stock must be kept hard and healthy, and to accomplish this roughages must constitute a large part of the ration. Alfalfa, clover, bluegrass, and Bermuda are permanent pasture crops which furnish excellent summer feed for sows. Rape, soy beans, cowpeas, and sorghum are especially adapted for swine feeding. Their use will reduce the necessary daily grain ration to 1 pound or less per hundredweight of sow during the grazing season, which is a large saving in favor of pasture. Plenty of water, shade, and space to exercise are other essentials for the production of strong, healthy litters.

The sows can run together in the same pasture within two or three weeks of the farrowing date. At this time those that are due to farrow should be separated from the herd and placed in a separate paddock or pen, where they can farrow their pigs undisturbed.

Keep the sow on pasture if possible, and provide dry, well-ventilated quarters free from draft in which she can farrow the pigs.

USE PURE, LIVE SEED.

Seedsmen Will Furnish Information Showing Quality of Seed—This Will Help to Get a Better Stand.

No agricultural production can be successful unless a good stand of the crop is secured in the field. A full stand can not economically be obtained if seed of unknown quality is used. At the present time when every endeavor is being made to stimulate agricultural production it is especially important that the man who has prepared his land for a crop should have definite information as to the quality of the seed he is sowing.

With a view to devising some practical means for furnishing the farmer essential information concerning the commercial seeds he is buying, the Secretary of Agriculture recently invited representatives of the seed trade to confer with the department on the subject.

Officers of the American Seed Trade Association and of the Wholesale Grass Seed Dealers Association, as well as representatives of 21 leading seed firms, were present.

Because of the vital importance of the matter in relation to the effort to enlarge the production of staple food and feed crops, the department suggested that the seed trade voluntarily furnish the following information with the field-crop seeds they sell:

(1) Name of seedsman.

(2) Kind of seed.

(3) Proportion of pure, live seed present, with month and year of germination test.

(4) Country or locality of origin in the case of the following imported seeds: Beans, soy beans, Turkestan alfalfa, and red clover from southern Europe and Chile.

The representatives of the seed trade present agreed to adopt these suggestions with reference to their own business, and the officers of the associations represented agreed to recommend that these suggestions be adopted by all firms included in their membership. The question of such adoption is now being submitted to individual seedsmen, members not present at the conference, for their approval.

It is contemplated that the information outlined above will be furnished by seedsmen, with all field-crop seeds, when sold in lots of 10 pounds or over and that this plan will be put in full operation not later than July 1, 1917. The United States Department of Agriculture, through the Seed Testing Laboratories of the Bureau of Plant Industry, will render such assistance in carrying out this plan as the facilities permit through the making of actual analyses of samples of seed.

BLACK WALNUT.

Forethought in Marketing Necessary to Obtain Best Prices—Cooperation in Shipping.

Black walnut is now in good demand and brings high prices on the market. The larger clear logs, butt cuts, and stumps, suitable for sawing or slicing into furniture veneers, are readily salable. Second cuts and limbs, however, are more difficult to market advantageously.

For high-grade walnut veneer the market wants logs 16 inches and over in diameter at the small end. Practically any length from 6 to 16 feet will do, but lengths of from 7 to 10 feet prevail. There is a good demand for walnut grown in the open because the rapid growth gives the wood a variegated color and a richly figured grain or pattern that is so much in favor now for furniture. For logs of this character the present prices range from $60 to $100 per 1,000 board feet at the railroad. Butts should always be cut well into the ground in order to obtain as much as possible of the stump, which is often the choicest part of the tree.

Walnut logs left after the choice cuts have been removed should be peeled, the ends painted, and then rolled on sticks to keep them from the ground and to avoid deterioration. Walnut of this character is in demand for gunstocks. Recently there has been an unprecedented demand for these and the market has absorbed all the suitable wood offered. Now that the United States has entered the war, it is likely that the demand for second and third grade logs will be continued.

Logs of this character are also in demand for sawed furniture stock. When intended for the latter purpose it is usually most profitable to saw them up locally into 1-inch boards, which should be well air-dried.

Black walnut is still cut into crossties in some communities. This is generally an unprofitable practice, however. Walnut logs of grades lower than veneer logs bring from $30 to $35 per 1,000 feet in the log for the smaller sizes, and from $40 to $60 for the larger and better classes. A 12-inch walnut log 8½ feet long, if sold in the log without any labor of hewing or splitting, should bring between $1.25 and $1.60. If hewed into a tie and delivered at the railroad, it would be worth about 65 cents, and if cut into cordwood, assuming the market price of this to be $3.50 per cord, it would be worth about 25 cents. It is obvious, therefore, that walnut owners may incur considerable loss if they do not exercise forethought in marketing their timber. Cooperative marketing by a number of owners, each of whom has less than a carload of logs, is recommended with such valuable woods as hickory, ash, white oak, and black walnut. The forestry specialists and the county agents attached to the cooperative demonstration work of the United States Department of Agriculture will be glad to assist timber owners in obtaining a fair return for their property.

ORDER FOOD CONTAINERS.

Growers and Shippers Should Order Immediate Deliveries of Produce Packages.

In order to avoid serious delay and probable food loss during the approaching harvest season, growers and shippers are urged by the United States Department of Agriculture to estimate accurately their needs and place their orders for barrels, crates, hampers, baskets, and other containers for food products at once. They should notify manufacturers to begin making deliveries immediately, or at least as soon as their crops are reasonably assured. Larger supplies of containers will be needed this season than usual. Since crops of most perishable products must be moved as soon as ready to harvest, serious financial loss to growers and shippers and failure to save needed crops may result unless orders for packages are placed promptly and shipments begun within the next few weeks.

The Department of Agriculture is in receipt of advice from widely separated parts of the United States that there may be a package shortage this season unless growers and shippers are able to anticipate their needs. It will be difficult for manufacturers to meet the emergency should abnormal demand for additional packages for perishable crops arise in the midst of the harvest season. At that time, it is pointed out, traffic on railroads will be heaviest and shipments may be much delayed when most needed. The responsibility of manufacturers to put forth every reasonable effort to help meet the situation should not be overlooked.

Few persons, specialists of the department say, realize the enormous quantities of barrels, baskets, crates, and similar containers that are used each year. Containers for fruit and vegetables are very bulky. It is quite apparent that it would be nearly impossible for factories to accumulate in advance and store a supply sufficient for the total needs of the fruit and vegetable crop of the country. The only safe plan is for each grower and shipper to order his supplies now. The department points out that such prompt action will tend to speed up the manufacture and delivery of packages and may save many thousands of dollars' worth of crops.

Porto Rico shipped over $3,000,000 worth of fruit to the United States in 1915. Fresh pineapples shipped to the mainland that year were valued at $1,723,694.

FOOD WASTE AT HOME.

Housewife the Chief Factor in the Conservation of the Nation's Food Supply—Helpful Suggestions.

One dollar out of every five that is spent for food is thrown away in some American households. In the majority it may be only one out of every ten or twelve, but in almost every home the waste is an important item in the cost of living. Investigators have estimated it as ranging from practically nothing to 20 per cent of the food purchased, with 7½ per cent as a mean value. Few housewives probably have any idea of what it amounts to in their own homes, but there are fewer still who could not reduce it if they would.

Ordinarily the process of wasting begins with the purchase of food. It is not uncommon, for example, for the housewife to want the butcher to trim off the fat and bones which were nevertheless included when the meat was weighed and for which he has charged his customer. Since these have to be paid for, the economical housewife will see that they are taken home and used. The bones should go into the soup pot and the fat can be utilized for cooking and thus made to reduce the amount of fat which must be purchased specially for that purpose and which in many households is a considerable item in the year's food bill.

Another cause of wasteful buying is the erroneous idea that the value of foods as food is in some way determined by the price. As a matter of fact, the nutritive value of an article of food and its price seldom have any relation to each other. An expensive cut of beef is not necessarily any more sustaining than a cheap one. It usually tastes better, or can be cooked by easier methods. To buy it deliberately for these qualities does not necessarily mean waste of money, but if one is looking for nutriment, not flavor or convenience, the purchase of the expensive cut is often unwarranted extravagance. Care in cooking and seasoning moreover, will make inexpensive meats attractive and much better than costly ones poorly prepared.

With fruits and vegetables the price is often determined by the season. A vegetable out of season is much more expensive than one in season, but it is no more nutritious. In order to purchase to best advantage, the housewife should understand such things and should also be familiar with general market conditions. If she can choose between going to market in person and ordering by telephone or at the door, she should know whether in her particular circumstances the convenience of the latter makes up for the possibly better prices and quality to be obtained by the former method. She should, further, know whether the saving often effected by buying in bulk is likely to be offset or not by spoilage and waste in

the home. If she has no adequate storage facilities it may often be wiser to buy in small quantities. Furthermore, when this is done, there is no doubt that there is less temptation to be unduly lavish with the article in question.

Once the food is in the house, it is important that all that is edible be eaten. The peeling of potatoes, for example, seems a small thing, but it has been estimated that 20 per cent of the flesh of the potato is often lost in the process. Not only are many other vegetables and fruits wastefully pared, but in many cases the tops or outer leaves are thrown away, although they could be used as greens, to flavor soups, and in other ways.

One of the articles of food with which the waste is greatest is bread. In almost every household quantities of this are "left over" every day. Frequently they are put into the garbage pail; more rarely they are made into bread pudding or a few are used in scalloped dishes or in similar ways. It is not generally known, however, that dried bread can be ground in a coffee mill or food chopper and used in place of part or all of the flour called for in gingerbread, and cookies, pancakes, and biscuits, or in thickening soups, sauces, etc. This fact has long been familiar to commercial bakers and there is no reason why the housewife should not practice the same economy that they do.

One great difficulty is that too many American housewives consider the details of real economy beneath them. It has not been the American practice to scrimp. It is not uncommon in Europe, for instance, to count out the lumps of sugar that are to be used at the breakfast table—so many cups of coffee, so many lumps of sugar. Such a practice would seem to many of us intolerably niggardly, but there is no reason for going to the other extreme by putting on the table or on the individual plate more than will be eaten. The food that is left on the plate is a total loss, and even that which is left on the platter is often thrown away though it can be made to appear again in as attractive a form if the housekeeper knows how to use it. Poor cookery means waste for if food does not appeal to the palate, in all probability it will not be eaten; and in that case it is a total loss. This is also true of food that has suffered from bad seasoning. To oversalt or burn a dish may be as wasteful as to throw it into the garbage pail.

The serving of excessively large helpings usually springs from a mistaken idea of generosity. As a matter of fact, however, a great many of us probably often eat more than we need or really want rather than leave food on our plates. And it is always possible by giving another helping to satisfy anyone who is really hungry without forcing on the others more than they care for. This does not mean that it is good economy for the housewife to supply her family with less than it actually needs. That would be a sign of very poor management or else of desperation.

Just how much food the human body really does need is a complicated problem to which in recent years scientists have been devoting much attention. Food is the source from which the body derives both its energy, or fuel, and the substances it uses to build and replace its worn-out tissues. It also provides small amounts of recently discovered substances needed to regulate growth and other bodily functions. As a unit for measuring the energy supplied, scientists have adopted what is known as the calorie, and it is estimated that for a full-grown man engaged in moderate physical work 3,000 calories a day are needed. Of these from 300 to 400 should be supplied in the form of protein, the chief substance utilized by the body in tissue building. There should also be some fruits and vegetables which supply mineral matters needed for building tissues and help in various ways to keep the body machinery in good working order; also fat and starches and sugars which are valuable sources of energy. The energy supplied by the foods as a whole is consumed by the body in running itself and performing its daily work.

The number of calories and the amounts of nutrients contained in stated quantities of different kinds of food have been worked out by scientists and afford a basis for comparing the nutritive value of various dishes. The matter is so complicated that the ordinary housewife probably has neither the time nor the inclination to make a mathematical calculation of the nourishment her meals afford. It will, however, help her to know that by observing a few fundamental principles she can alter her bills of fare to suit changing conditions at home or in the market without any risk of underfeeding the family. First among these is the fact that an adequate diet should contain articles from each of the five groups into which the common food materials may be divided.

These are: (1) Vegetables and fruits, which supply acids and other substances that the body needs to keep it in proper working order, as well as some building materials and energy; (2) meats, fish, eggs, milk, legumes, etc., in which the proportion of protein to other substances is high in comparison with the other groups; (3) starchy foods like potatoes, rice, flour, and other grain products, etc., which furnish much energy and some protein and mineral matters; (4) foods rich in sugar, an excellent source of body fuel, the pleasant flavor of which makes the diet more attractive; and (5) the fats, like butter, bacon, cream, lard, etc., which are valuable sources of energy.

No one of these groups can profitably be omitted altogether. It is nevertheless possible to avoid from a nutritive point of view a useless wasts of money by selecting, first, the cheapest articles in each group; and second, by substituting to a certain extent articles from a cheaper group for those from a more expensive. In particular the grain foods in group 3 may be used more extensively than is common in many households, and the use of the higher-priced ones in group 2 may be correspondingly decreased. The grains furnish protein as well as energy, and in a cheaper form than meat. By combining them with a little meat the meat flavor is secured and a dish as nutritive but much less expensive than meat alone obtained. This does not mean that all animal foods or even all meats should be cut out of the diet entirely. As far as can be judged, in the light of our present knowledge, the body is most likely to keep in health if it obtains its protein from a variety of sources, including milk (especially in the case of children), eggs, meat, etc. Similarly, dried fruits contain not only the characteristic properties of foods in group 1, but sugar as well, and a liberal use of them will provide in an economical form much of the sugar which the palate craves.

The housewife, too, who understands these and similar facts in regard to the composition and uses of food will be able to free herself from many existing prejudices. Skim milk, for instance, is regarded by many persons as unfit for human use. As a matter of fact, it contains practically all of the constituents of whole milk except the fat taken off in the cream. On farms it is frequently fed to live stock, but in many cases it might be more economical to use it in the household. If it is considered too thin for drinking, it may be used in cooking, as in making soups, mixing bread, or cooking cereals.

These are merely suggestions. A hundred others will occur to the woman who really wants to plan her meals efficiently. Waste means the failure to make full use of everything that is bought or raised. To avoid it takes skill and knowledge and in most cases time and trouble as well. Cheap foods and "left overs" can not be made attractive as easily and as quickly as high-priced supplies fresh from the dealer. This is one reason why some foods are cheap. The more the housewife can rely on her own skill and labor to make her meals nutritious and attractive, the less money she will have to give for expensive materials and help.

NOT A PRESERVATIVE.

There is no corn meal and water preservative for vegetables. A report to this effect recently published, and credited to the United States Department of Agriculture, probably originated from the fact that a mixture of corn meal and water had been used by a department specialist to start the lactic-acid ferment in cull potatoes put up for feed in the form of silage. This starter has been used in the case of vegetables fermented for food but it is not the preserving ferment, the specialists explain; it only starts this ferment. It is not recommended for household use, however. The same purpose is better served, as recently announced in connection with the fermentation process of preserving vegetables for food, by the addition of a small amount of vinegar which keeps injurious bacteria down while the natural lactic-acid ferment starts.

INTERCHANGEABLE FOODS.

Let Cost Determine What Source of Starch to Use—Potatoes as a Source of Starch.

Rice, wheat, and corn, the common starchy foods eaten in the mixed diet usual in most families, are relied on mainly as sources of energy to the body, and have about the same value, pound for pound. Therefore if rice, wheat flour, cracked wheat, corn meal, or hominy cost the same per pound, they are equally cheap fuel foods. Such foods, therefore, can be freely interchanged if foods like meat, milk, eggs, or beans and fruits or vegetables are eaten also.

Most wheat breakfast foods and wheat pastes, like macaroni or spaghetti, also have about the same energy value as wheat flour, corn, and rice. They differ very much in appearance and also in bulk, according to the method of manufacture, and the cost can not be judged merely by the size of the package to be obtained for 5 or 10 cents. Now that the law requires the net weight to be marked on the outside of every package, it is easy to reckon how much the food material actually costs a pound. Thus if the net weight of a 10-cent package of breakfast food is 8 ounces, a pound, or 16 ounces, would cost 20 cents.

As a general rule—and very justly—the simpler preparations, which it has taken less time and labor to put up, cost less than the more elaborate ones. Those sold in bulk usually cost less than those sold in cartons. Each housekeeper must decide whether the variety and convenience of the more expensive kinds compensates for the extra cost. In any case before she can choose wisely she must have reckoned how much the package goods cost per pound.

Leaving aside cost of preparation and comparing rice with ready-made wheat bread, it appears that rice at 7 cents a pound is about as cheap a source of body fuel as bread at 5 cents a pound. If bread costs 8 cents a pound, rice costing up to 10 cents a pound is a cheaper source of energy. Bread costing 9 cents a pound would furnish energy as cheaply as rice at 12 cents a pound. Corn bread usually costs much less per pound than wheat bread, and so furnishes energy at a still lower cost in the above comparison than wheat bread.

A pound of potatoes yields hardly one-fifth as much body energy as a pound of rice, corn meal, or wheat. This is partly because they are much more watery and partly because a large proportion is discarded with the skins. Part of this loss is inevitable because the skin itself is not usually considered good to eat; but the more carelessly potatoes are pared, the more of the valuable edible substance goes with the skin. A bushel of potatoes weighs 60 pounds, a peck 15 pounds. When potatoes are selling at $1.20 a bushel, or $0.30 a peck, they therefore cost 2 cents a pound. If their fuel value is one-fifth that of rice, they furnish fuel at about the same cost as rice at 10 cents a pound and at about twice the cost of corn meal or hominy at 5 cents a pound. When potatoes cost $2.40 a bushel, or $0.60 a peck, they are about twice as expensive as sources of fuel as rice at 10 cents, and four times as expensive as corn meal or hominy at 5 cents a pound. These comparisons show that, merely for providing fuel, potatoes are often more expensive than rice, and practically always more expensive than corn meal or hominy. As was pointed out above, potatoes often are relied on not merely as a source of fuel, but also as a source of some of the mineral matters needed by the body. They are usually among the most economical of the vegetables which serve this second purpose, because they supply a generous amount of energy as well as the building materials.

FRUIT JUICES FOR JELLY.

May Be Sterilized and Bottled without Sugar and Made into Jelly at Housewife's Convenience.

Fruit juices for use later in jelly making can be sterilized and bottled without sugar and made into jellies at the housewife's convenience. This enables her to do with fewer jelly glasses and to distribute her purchases of sugar for jelly making through the year. Moreover, with the bottled juice she can make a greater variety of jellies, as juices which will not jell can be put up when the fruit is ripe and combined later with fruits that will jell, or fruits ripening at different seasons can be combined. For example, the juice of strawberries, cherries, or pineapple can be kept without sugar and later when apples are plentiful can be made into combination jelly.

From the unsugared sterilized juices of currants, apples, crabapples, and grapes, kept from 9 to 18 months, the Bureau of Chemistry, United States Department of Agriculture, recently made jellies of excellent texture, flavor, and color.

To put up unsugared fruit juices for jelly making proceed exactly as if jelly were to be made at the time. Cook the fruits until they are soft and strain out the juice through a flannel bag. Heat and pour while hot into bottles previously scalded. Fill the bottles full, leaving no air space between juice and cork or seal. Place the filled sealed bottles on their sides in water near the boiling point, and keep them in the bath for about 30 minutes. Make sure that the corked or sealed end is under the hot water. As soon as the bottles are cool cover the cork with a paraffin seal. Thorough sterilization and sealing are absolutely essential to success.

To make jelly from the sterilized juice, test its jelling quality, add the proper amount of sugar, and proceed as in making jelly from freshly expressed juice.

CORN AND CHEESE.

Specialists of the United States Department of Agriculture point out that corn may be used with cheese in place of macaroni for the preparation of a delicious and nutritive combination dish. The following recipe has been worked out:

1 cup samp (coarsely ground or cracked corn).	1 quart of water.
	1¾ teaspoons salt.

Boil the samp in the salted water until tender. Drain and combine with the following sauce:

1 cup skim milk.	1 teaspoon salt.
1 cup finely cut cheese.	¼ teaspoon mustard, paprika, or other seasoning.
2 tablespoons flour.	

Mix the seasonings with the dry flour. Add enough milk to form into a smooth paste. Add the remainder of the milk and heat in a stewpan, stirring constantly until thick. Add the cheese and stir until it is thoroughly melted.

Put a layer of the boiled samp in a baking dish or casserole. Add a layer of sauce, and so on alternately until the material is all used. Sprinkle bread crumbs over the top layer of sauce and cook in a medium oven until the crumbs brown.

Lye hominy or hulled corn (to give it both its southern and its northern name) may be used in place of coarse cracked corn in the preparation of this dish. If this product is used, it is unnecessary to heat it until it is placed in the oven. A richer sauce may be made, if desired, as follows:

Melt 2 level tablespoonfuls of butter in a saucepan. Mix into it the flour and seasonings. Add the milk and heat, stirring constantly until the sauce becomes thick and smooth. Add the cheese and stir until it is melted.

Housewives, interested in economy, who wish to be certain that their families are getting proper food and not too much, should ask the United States Department of Agriculture to send Farmers' Bulletin 808, "How to Select Foods—What the Body Needs."

Much food is ruined by being stored where flies or other insects or rats and mice can get at it. Much cereal food is ruined because it is not protected against weevils or other insects.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JUNE 27, 1917. No. 47

THE PRESIDENT'S FLAG DAY ADDRESS.

President Wilson delivered the following address at the Flag Day exercises in Washington June 14.

My Fellow Citizens: We meet to celebrate Flag Day because this flag which we honor and under which we serve is the emblem of our unity, our power, our thought and purpose as a Nation. It has no other character than that which we give it from generation to generation. The choices are ours. It floats in majestic silence above the hosts that execute those choices, whether in peace or in war. And yet, though silent, it speaks to us—speaks to us of the past, of the men and women who went before us and of the records they wrote upon it. We celebrate the day of its birth; and from its birth until now it has witnessed a great history, has floated on high the symbol of great events, of a great plan of life worked out by a great people. We are about to carry it into battle, to lift it where it will draw the fire of our enemies. We are about to bid thousands, hundreds of thousands, it may be millions, of our men, the young, the strong, the capable men of the Nation, to go forth and die beneath it on fields of blood far away—for what? For some unaccustomed thing? For something for which it has never sought the fire before? American armies were never before sent across the seas. Why are they sent now? For some new purpose, for which this great flag has never been carried before, or for some old, familiar, heroic purpose for which it has seen men, its own men, die on every battle field upon which Americans have borne arms since the Revolution?

Accountable at Bar of History.

These are questions which must be answered. We are Americans. We in our turn serve America, and can serve her with no private purpose. We must use her flag as she has always used it. We are accountable at the bar of history and must plead in utter frankness what purpose it is we seek to serve.

It is plain enough how we were forced into the war. The extraordinary insults and aggressions of the Imperial German Government left us no self-respecting choice but to take up arms in defense of our rights as a free people and of our honor as a sovereign Government. The military masters of Germany denied us the right to be neutral. They filled our unsuspecting communities with vicious spies and conspirators and sought to corrupt the opinion of our people in their own behalf. When they found that they could not do that, their agents diligently spread sedition amongst us and sought to draw our own citizens from their allegiance—and some of those agents were men connected with the official embassy of the German Government itself here in our own Capital. They sought by violence to destroy our industries and arrest our commerce. They tried to incite Mexico to take up arms against us and to draw Japan into a hostile alliance with her—and that, not by indirection, but by direct suggestion from the foreign office in Berlin. They impudently denied us the use of the high seas and repeatedly executed their threat that they would send to their death any of our people who ventured to approach the coasts of Europe. And many of our own people were corrupted. Men began to look upon their own neighbors with suspicion and to wonder in their hot resentment and surprise whether there was any community in which hostile intrigue did not lurk. What great nation in such circumstances would not have taken up arms? Much as we had desired peace, it was denied us, and not of our own choice. This flag under which we serve would have been dishonored had we withheld our hand.

But that is only part of the story. We know now as clearly as we knew before we were ourselves engaged that we are not the enemies of the German people and that they are not our enemies. They did not originate or desire this hideous war or wish that we should be drawn into it; and we are vaguely conscious that we are fighting their cause, as they will some day see it, as well as our own. They are themselves in the grip of the same sinister power that has now at last stretched its ugly talons out and drawn blood from us. The whole world is at war because the whole world is in the grip of that power and is trying out the great battle which shall determine whether it is to be brought under its mastery or fling itself free.

War Begun by German Militarists.

The war was begun by the military masters of Germany, who proved to be also the masters of Austria-Hungary. These men have never regarded nations as peoples, men, women, and children of like blood and frame as themselves, for whom governments existed and in whom governments had their life. They have regarded them merely as serviceable organizations which they could by force or intrigue bend or corrupt to their own purpose. They have regarded the smaller States, in particular, and the peoples who could be overwhelmed by force, as their natural tools and instruments of domination. Their purpose has long been avowed.

Developed Plans of Rebellion.

The statesmen of other nations, to whom that purpose was incredible, paid little attention; regarded what German professors expounded in their classrooms and German writers set forth to the world as the goal of German policy as rather the dream of minds detached from practical affairs, as preposterous private conceptions of German destiny, than as the actual plans of responsible rulers; but the rulers of Germany themselves knew all the while what concrete plans, what well-advanced intrigues lay back of what the professors and the writers were saying, and were glad to go forward unmolested, filling the thrones of Balkan States with German princes, putting German officers at the service of Turkey to drill her armies and make interest with her Government, developing plans of sedition and rebellion in India and Egypt, setting their fires in Persia. The demands made by Austria upon Serbia were a mere single step in a plan which compassed Europe and Asia, from Berlin to Bagdad. They hoped those demands might not arouse Europe, but they meant to press them whether they did or not, for they thought themselves ready for the final issue of arms.

Their plan was to throw a broad belt of German military power and political control across the very center of Europe and beyond the Mediterranean into the heart of Asia; and Austria-Hungary was to be as much their tool and pawn as Serbia or Bulgaria or Turkey or the ponderous States of the East. Austria-Hungary, indeed, was to become part of the central German Empire, absorbed and dominated by the same forces and influences that had originally cemented the German States themselves. The dream had its heart at Berlin. It could have had

a heart nowhere else! It rejected the idea of solidarity of race entirely. The choice of peoples played no part in it at all. It contemplated binding together racial and political units which could be kept together only by force—Czechs, Maygars, Croats, Serbs, Roumanians, Turks, Armenians—the proud States of Bohemia and Hungary, the stout little commonwealths of the Balkans, the indomitable Turks, the subtle peoples of the East. These peoples did not wish to be united. They ardently desired to direct their own affairs, would be satisfied only by undisputed independence. They could be kept quiet only by the presence or the constant threat of armed men. They would live under a common power only by sheer compulsion and await the day of revolution. But the German military statesmen had reckoned with all that and were ready to deal with it in their own way.

Austria at Germany's Mercy.

And they have actually carried the greater part of that amazing plan into execution! Look how things stand. Austria is at their mercy. It has acted, not upon its own initiative or upon the choice of its own people, but at Berlin's dictation ever since the war began. Its people now desire peace, but can not have it until leave is granted from Berlin. The so-called Central Powers are in fact but a single power. Serbia is at its mercy, should its hands be but for a moment freed. Bulgaria has consented to its will, and Roumania is overrun. The Turkish armies, which Germans trained, are serving Germany, certainly not themselves, and the guns of German warships lying in the harbor at Constantinople remind Turkish statesmen every day that they have no choice but to take their orders from Berlin. From Hamburg to the Persian Gulf the net is spread.

Is it not easy to understand the eagerness for peace that has been manifested from Berlin ever since the snare was set and sprung? Peace, peace, peace has been the talk of her foreign office for now a year and more; not peace upon her own initiative, but upon the initiative of the nations over which she now deems herself to hold the advantage. A little of the talk has been public, but most of it has been private. Through all sorts of channels it has come to me, and in all sorts of guises, but never with the terms disclosed which the German Government would be willing to accept. That Government has other valuable pawns in its hands besides those I have mentioned. It still holds a valuable part of France, though with slowly relaxing grasp, and practically the whole of Belgium. Its armies press close upon Russia and overrun Poland at their will. It can not go farther; it dare not go back. It wishes to close its bargain before it is too late and it has little left to offer for the pound of flesh it will demand.

The military masters under whom Germany is bleeding see very clearly to what point fate has brought them. If they fall back or are forced back an inch, their power both abroad and at home will fall to pieces like a house of cards. It is their power at home they are thinking about now more than their power abroad. It is that power which is trembling under their very feet; and deep fear has entered their hearts. They have but one chance to perpetuate their military power or even their controlling political influence. If they can secure peace now, with the immense advantages still in their hands which they have up to this point apparently gained, they will have justified themselves before the German people; they will have gained by force what they promised to gain by it—an immense expansion of German power, an immense enlargement of German industrial and commercial opportunities. Their prestige will be secure, and with their prestige their political power. If they fail, their people will thrust them aside; a government accountable to the people themselves will be set up in Germany as it has been in England, in the United States, in France, and in all the great countries of the modern time except Germany. If they succeed they are safe, and Germany and the world are undone; if they fail, Germany is saved and the world will be at peace. If they succeed, America will fall within the menace. We and all the rest of the world must remain armed, as they will remain, and must make ready for the next step in their aggression; if they fail, the world may unite for peace, and Germany may be of the union.

Hopes to Deceive All Democracy.

Do you not now understand the new intrigue, the intrigue for peace, and why the masters of Germany do not hesitate to use any agency that promises to effect their purpose, the deceit of the nations? Their present particular aim is to deceive all those who throughout the world stand for the rights of peoples and the self-government of nations; for they see what immense strength the forces of justice and of liberalism are gathering out of this war. They are employing liberals in their enterprise. They are using men, in Germany and without, as their spokesmen whom they have hitherto despised and oppressed, using them for their own destruction—socialists, the leaders of labor, the thinkers they have hitherto sought to silence. Let them once succeed and these men, now their tools, will be ground to powder beneath the weight of the great military empire they will have set up; the revolutionists in Russia will be cut off from all succor or cooperation in western Europe and a counter revolution fostered and supported; Germany herself will lose her chance of freedom; and all Europe will arm for the next, the final struggle.

The sinister intrigue is being no less actively conducted in this country than in Russia and in every country in Europe to which the agents and dupes of the Imperial German Government can get access. That Government has many spokesmen here, in places high and low. They have learned discretion. They keep within the law. It is opinion they utter now, not sedition. They proclaim the liberal purposes of their masters; declare this a foreign war which can touch America with no danger to either her lands or her institutions; set England at the center of the stage and talk of her ambition to assert economic dominion throughout the world; appeal to our ancient tradition of isolation in the politics of the nations; and seek to undermine the Government with false professions of loyalty to its principles.

Will Make No Headway.

But they will make no headway. The false betray themselves always in every accent. It is only friends and partisans of the German Government whom we have already identified who utter these thinly disguised disloyalties. The facts are patent to all the world, and nowhere are they more plainly seen than in the United States, where we are accustomed to deal with facts and not with sophistries; and the great fact that stands out above all the rest is that this is a peoples' war, a war for freedom and justice and self-government amongst all the nations of the world, a war to make the world safe for the peoples who live upon it and have made it their own, the German people themselves included; and that with us rests the choice to break through all these hypocricies and patent cheats and masks of brute force and help set the world free, or else stand aside and let it be dominated a long age through by sheer weight of arms and the arbitrary choices of self-constituted masters, by the nation which can maintain the biggest armies and the most irresistible armaments—a power to which the world has afforded no parallel and in the face of which political freedom must wither and perish.

For us there is but one choice. We have made it. Woe be to the man or group of men that seeks to stand in our way in this day of high resolution, when every principle we hold dearest is to be vindicated and made secure for the salvation of the nations. We are ready to plead at the bar of history, and our flag shall wear a new luster. Once more we shall make good with our lives and fortunes the great faith to which we were born, and a new glory shall shine in the face of our people.

FORAGE FOR HOGS.

Sow Crops Now for Green Feed After Midsummer—Rape, Soy Beans, Corn, and Sorghum Are Excellent.

Now is the time to prepare forage for feeding hogs so that there will be a continual supply of fresh, green succulent feed in late summer when growth in permanent and other pastures begins to slacken. Specialists of the United States Department of Agriculture make the following suggestions for such forage crops.

Rape.

Rape, which may be planted from April until the middle of July, requires an abundance of moisture, temperate growing weather, and rich soil. It is ready to pasture when about 8 inches high or six to eight weeks after sowing. One acre will graze from ten to fifteen 100-pound shoats per month, and if not too closely grazed will make a second growth for late fall grazing.

Soy Beans and Cow Peas.

These two legumes may be planted from directly after corn planting time until the middle of July and ordinarily would be ready to graze about three months after planted. Pasture these when the pods are almost mature, as the beans supply the most important forage element. An acre of pasture will graze from fifteen to twenty 100-pound pigs for six weeks, provided it is supplemented with a heavy corn ration.

Sorghum.

Sorghum sown broadcast or in drills the latter part of corn-planting seasons, is ready to pasture when 18 inches high, or in six to eight weeks. With a grain ration of from 15 to 25 per cent of tankage or meat meal, an acre will carry 15 to 20 pigs for a month. Do not graze pigs on stunted or second-growth plants, as these are liable to cause poisoning.

Corn.

Corn is a forage crop and affords pasture similar to sorghum.

Management of Forage Crops.

In pasturing any of these crops, restrict the area so that the hogs will eat it off rapidly. Then move them to a fresh area, for if they are allowed much range they will trample more than they consume.

SAVE WINTER OATS FOR SEED.

Farmers in the South who have winter oats of good quality are urged to save them for seed rather than to feed them. This crop winterkilled very generally over the South last winter, and specialists of the United States Department of Agriculture say the indications are that the seed supply will be very short. Many counties in the Southeastern States will have to purchase all their seed from other localities, and those favored sections where a partial or full crop was produced should save every available bushel to meet this demand. Farmers are urged to feed corn or other grain to work stock or to purchase northern-grown spring oats for feeding in order to save the winter oats for sowing.

Because of the scarcity of winter oats of good quality those who have them are quite sure to profit by saving them for seed rather than feeding them. Farmers who do not know where they can sell seed oats should communicate with their county agent, the director of their State experiment station, or R. A. Oakley, chairman committee on seed stocks, United States Department of Agriculture, Washington, D. C. Present indications are that there will be a ready market for all good seed of this crop this year.

REDUCE HAYING COST.

Sweep Rake Will Save Labor and Time for Eastern Hay Growers.

Eastern hay growers who are confronted with the fact of farm-labor shortage can get along with fewer men and can reduce the cost of haying by using the sweep rake, say specialists of the United States Department of Agriculture in Farmers' Bulletin 838, "Harvesting Hay with a Sweep Rake." A two-man crew, using two sweep rakes and four horses, with the average length of haul in the East, can in a given length of time haul to the barn and put into the mow by slings about double the amount of hay usually handled by a three-man crew working with a wagon. If the hay is to be stacked in the field, three times the amount can be handled. In this case the third man will be needed on the stack.

Any boy capable of driving a pair of horses can operate a sweep rake and handle considerably more hay in a given time than a man pitching by hand. On many eastern farms only a small amount of grass is cut at one time because of the uncertainty of the weather. Where sweep rakes are available more hay can be cut and saved because of the rapidity with which the hay may be hauled to the stack or barn.

For farm conditions as found in the Eastern States the specialists advise the use of the three-wheeled or four-wheeled sweep rake. How to operate these simple and inexpensive haying tools is explained in the bulletin.

SAVE WHITE PINES.

Cooperate to Stop Spread of White-Pine Blister Rust—Location of Diseased Trees Wanted.

In an effort to locate all plantations and private plantings of white pine in the United States, in order that more effective measures may be taken to prevent the spread of the destructive white-pine blister rust, the United States Department of Agriculture, in cooperation with the States, is making a survey of the planted white pine and white-pine nursery stock of the country.

In this work the department and its collaborators are desirous of receiving the cooperation of all tree lovers, all forest owners, and all organizations, such as the Boy Scouts, which are working for the public welfare.

All persons interested in saving white pines, the department states, can help by sending a post card to the Office of Forest Pathology, United States Department of Agriculture, Washington, D. C., giving the location and owner of any white pines known to them which were grown from nursery stock and the approximate number and height of the trees. Both the writer and the owner will be sent a copy of Farmers' Bulletin 742, The White-Pine Blister Rust. This publication has colored illustrations of the rust, and descriptive matter which will make it possible for the reader to recognize the disease if it has become developed in his neighborhood.

This rust, a disease of the five-needled, or white pines, is known to be very dangerous to the white-pine forests in Europe. It invaded this country between 1904 and 1912 in shipments of nursery stock, mostly from Germany. Between these dates probably 10,000,000 small white-pine trees were imported, most of them coming to the New England States. Many shipments, however, are known to have been made to the States of Ohio, Michigan, Illinois, Indiana, Iowa, and Minnesota, and to have been sent out by nurserymen to parks, cemeteries, and private planters.

A peculiarity of this rust parasite is that it has two classes of hosts, white pines and species of Ribes, that is, currants and gooseberries. As far as known the disease can not pass from pine to pine, but must pass from pine to the currant or gooseberry, and then back to the pine. On the pines the disease takes the form of a blister or canker, and has been found on main stem, branch, and twig. On the currant and gooseberry the rust forms small orange spots or minute orange or brown hair-like projections on the under side of the leaf. The life history of the organism causing the blister rust is very similar to that causing the cedar apple rust,

which spreads from the red cedar to the apple leaf, and to that causing the wheat rust, which spreads from the barberry bush to the wheat plant.

The blister rust was first found in this country on currants in 1906, but it did not again make its appearance until 1909.

FEED SOLDIERS—NOT TICKS.

The South's battle against the tick must not lag. It is not work which may be dropped during the course of war, the United States Department of Agriculture points out. Rather it must be pushed the more vigorously, in order that territory may be rescued from the unsatisfactory and often unprofitable cattle raising which the tick imposes and devoted to the more efficient and more profitable production of meat and milk which may be carried on in unquarantined territory.

Faced by the war demand for more meat, let us take advantage of an opportunity which lies close to hand. Let us recognize that it is our definite duty to turn our abundant grasses, our cheap and available concentrated feeds, and our mild climate to good account in the production of beef and milk and butter. And let us realize that to do this we must work together to remove the great obstacle—the tick.

Not only will the elimination of the tick make possible the greater and more profitable development of our native cattle; it will make possible also the bringing in of better beef and milk-producing stock, which now can not live under the attacks of ticks and the deadly germs of cattle fever which they transmit. Extermination of the tick, therefore, will give us quick, direct returns in the form of increased growth of native stock, and it will at the same time lay a firm foundation for the building up of a much more profitable cattle-raising industry in a year or two—while the war still may be in progress.

The tick works for our enemies by keeping down the supply of three of our most important foods. Let us recognize this pest, therefore, as an enemy also. And let us wage against him from to-day on, without interruption, a war of extermination.

Fruits valued at $27,081,396 were imported from foreign countries during 1915. Bananas constituted 50 per cent of the imports, having a valuation of $13,512,960. Imports of lemons were valued at $3,730,075, and the imports of currants, figs, grapes, olives, and pineapples amounted to more than a million dollars each.

SUMMER CARE OF BOAR.

Furnish Him Pasture, Shade, Shelter, Good Water, and Little or No Grain.

After the close of the spring breeding season, the boar should be kept over the summer as cheaply as possible. Maintain him in good, hard, thrifty, breeding condition by giving him an opportunity to exercise and by feeding him largely on pasture and forage crops.

A mature boar, if heavily grain fed, has a great tendency to fatten. The boar should be well fed, but not fat, as too high condition makes him inactive, a slow breeder, and a rather uncertain sire.

The boar needs little attention during the summer. Provide shelter, shade, and a fresh, clean water supply, and he will almost care for himself. Pasture is the best as well as the cheapest feed. It furnishes an abundance of nutrients, is palatable, and keeps the boar's system in good physical condition.

Permanent pastures are among the best, and certainly require the least attention. The clovers, blue grass, Bermuda, alfalfa, all make excellent pastures and furnish grazing during a long season. If these are not available, small plots of several temporary pasture crops may be used; for example, rape, peas and oats, peanuts, velvet beans, sorghum, cowpeas, and soy beans. By using any of these forage crops the boar can be maintained over the summer with a very small amount of grain, while if they were not used several pounds of grain per day would be required. On pasture, feed only enough grain to keep the boar in breeding condition. Very often, on good pasture, none will be required. Guard against feeding too much grain and getting the boar too fat.

The boar should be confined to a paddock and not run with the rest of the herd. If he is with another boar, they are apt to fight, and if he is placed with the breeding herd, the sows will farrow at indefinite dates. It would be impossible under these conditions to keep records of the time of service, and no provision could be made to care for the sow previous to farrowing.

In summer keep the boar thrifty but not too fat: use pastures to attain this end and to reduce the cost of feeding to a minimum.

MEAT PRODUCTION.

Veterinarians Organize for Distribution of Live Stock and to Control Disease.

The 900 members of the Indiana Association of Veterinary Practitioners have volunteered to do everything in their power to promote production of meat in that State by helping Federal and State authorities to control hog cholera and other diseases and by providing a method for the transfer of surplus stock, especially young animals, to farms which need and can feed them.

The service for controlling contagious animal diseases is an outgrowth of the work already done by volunteer veterinarians in 35 counties in Indiana where the United States Department of Agriculture is conducting its cooperative hog-cholera control and eradication work. Through volunteer veterinarians, a large number of hogs have been inoculated and the Evansville stockyards have been kept thoroughly clean. Not one of 7,000 hogs shipped under these arrangements to farms has developed cholera. Hog cholera apparently has been eradicated from the areas served by these volunteers. Since August, 1916, cholera has been reported in only 139 herds. Owing to the prompt administration of serum and the effective disinfection of premises, losses were light and in no case did the disease spread to other herds.

The association is placing at the disposal of local farmers, without charge, what is practically a volunteer State live-stock exchange. Most of the transfers of animals, of course, are made from farm to farm within a county, though the veterinarians are so organized that animals can be moved from one county to another as excess of animals or availability of feed dictates.

WATCH CROPS FOR PESTS.

Vigilance and Stock of Poisons Will Beat Insect Enemies This Year.

Be on the job against insect pests this season. Make your food contribution to the human family, not the insect family. Farmers who provide themselves with insect poisons and then keep a vigil for the first outbreaks of crop enemies will bring through the largest yields. Failure to detect an outbreak at its beginning and delay in getting combative material may be fatal to the crop attacked is the warning of entomologists in the United States Department of Agriculture.

That a great part of the annual loss to grain crops due to insect injuries can be avoided by vigilance and vigorous action on the part of growers is not sufficiently realized, the entomologists say. Frequently insect outbreaks originate within a limited area, and when this is the case it is often quite possible to stamp them out before any great damage has been done. If the outbreak is general, then community action is essential to prevent the infestation from becoming widespread.

Watch your crops constantly. Make a daily survey of the fields during the most active growing season, if possible.

If an outbreak of any insect foe is discovered, apply promptly the remedies which are recommended in publications of State experiment stations and of the United States Department of Agriculture.

If in doubt as to the identity of the pest, send specimens promptly in a tight tin box to your county agricultural agent, State experiment station, or nearest Federal entomological field station, accompanied by a request for information regarding it.

Keep on hand at least a small supply of the standard insecticide preparations, such as Paris green, lime, and arsenate of lead.

Report serious outbreaks of insects to the State or National authorities mentioned above. Federal entomological field stations charged with the investigation of cereal and forage insects are located at the following places:

Arizona, Tempe.
California, Martinez.
Indiana, West La Fayette.
Iowa, Sioux City.
Kansas, Wellington.
Maryland, Hagerstown.
Missouri, Charleston.
Ohio, Wakeman.
Oregon, Forest Grove.
South Carolina, Columbia.
Tennessee, Knoxville.
Texas, Brownsville.
Virginia, Charlottesville.
Utah, Salt Lake City.

SAVE SUGAR IN JELLY MAKING.

Much waste of sugar and spoilage of jellies can be avoided by using a simple alcohol test recommended by the Bureau of Chemistry, United States Department of Agriculture. To determine how much sugar should be used with each kind of juice put a spoonful of juice in a glass and add to it one spoonful of 95 per cent grain alcohol, mixed by shaking the glass gently. Pour slowly from the glass, noting how the pectin—the substance in fruits which makes them jell—is precipitated. If the pectin is precipitated as one lump a cup of sugar may be used for each cup of juice; if in several lumps the proportion of sugar must be reduced to approximately three-fourths the amount of the juice. If the pectin is not in lumps but is merely precipitated, the sugar should be one-half or less of the amount of the juice. If the juice shows no precipitation under this test, it is unsuitable for jelly making and must be combined with apples or other juices rich in pectin.

The housewife will do well before making the test, to taste the juice, as fruits not as acid as good tart apples probably will not make good jelly unless mixed with other fruits which are acid.

Soy-bean meal, like cottonseed meal, has a high fertilizing value. Feeding the meal to stock and applying the manure to the soil is the most economical way to use it.

PASTURES SAVE GRAIN.

Hogs May Be Raised on Less Grain with Plenty of Forage—Better to Feed Some Grain.

Pasturing hogs reduces the amount of grain needed to bring them to a profitable weight and marketable condition. Either permanent pasture or temporary crops afford such a grain reduction. The amount to reduce the grain ration is a problem for the individual farmer.

Pasturage, however, does not furnish a complete food, because a sufficient quantity of roughage can not be consumed and digested to supply all the nutrients required for rapid growth. The forage, especially from leguminous pastures, furnishes a cheap source of protein, supplies ash for bone making, adds bulk to the ration, and acts as a mild laxative and tonic and keeps the hog's system in condition to utilize profitably the concentrated feeds. Pasture crops alone, however, make a pig's fat thin and soft and grain is required to remedy these defects. Even with the present high prices of grain it pays better not to cut the grain ration more than half, feeding at the rate of 2 pounds daily per 100 pounds live weight to pigs on pasture, instead of the usual 4 to 5 pounds when they are in a dry lot. That this cut will pay better than a greater cut is fully established by records of the rate and cost of gains made by thousands of pigs under such treatment.

The concentrated feeds to use should be carefully considered. By-product feeds and feeds unsuited for human consumption are preferable. Many feeds formerly considered too high-priced are comparatively cheap now. On alfalfa pasture the grain should be largely carbonaceous in character. With nonleguminous pastures more protein supplement will be required.

Pigs, grain-fed on pasture, will gain a pound or more a day from weaning to a weight of 200 to 250 pounds, while those getting little or no grain will gain but one-half to three-fourths pound per day. This will bring spring pigs to a marketable weight in early fall, at the period of high prices, whereas those being pastured only are not ready for market until a month or two later. A grain ration, by bringing the hogs to an earlier market, reduces the time of feeding, the risk, and the interest on the investment. The animals are in higher condition with a finer and more palatable meat and fat.

Farmers substituting pastures entirely for grain and other concentrated feeds to their market hogs through the summer will find that before marketing in the fall it will be advisable to feed grain to harden the soft fat and meat and put on additional weight. Light but steady grain feeding on pasture, however, gives better results than a heavier feeding during a shorter finishing period.

FLAX NOT HARD ON LAND.

Not Bad for Crop That Follows—Wheat and Other Crops Do Well After Flax.

The more or less common belief that flax is hard on the land, and particularly bad for the crop that follows it, is unwarranted, according to the specialists of the United States Department of Agriculture. Farmers can safely plan to grow wheat or other crops on flax land the next season. The increased demand for flaxseed to supply linseed oil, widely needed for naval and other war purposes, has caused more than usual interest in flax production.

Farmers need not hesitate to plow up new land or sow old land to flax. While in much of the flax-growing territory flax grown after flax may fail because of flax wilt, this disease does not affect the health or productivity of any other crop than flax. Flax wilt introduced into the soil under most conditions prevents profitable repetition of flax, but does not deteriorate the soil.

At the experiment station at Brookings, S. Dak., the 8-year average yield of barley after flax in a 5-year rotation was 47.7 bushels, or 4.5 bushels more than the average yield of barley from all the rotation plats. In experiments conducted for two years at Moccasin, Mont., and Mandan, N. Dak., and for one year at Ardmore, S. Dak., and at Archer, Wyo., on spring plowing, wheat after wheat averaged 21.6 bushels and wheat after flax 22.7 bushels. In the same experiments, oats after oats yielded 41.1 bushels and oats after flax 49.3 bushels. In general, both wheat and oats have yielded at least as well, if not better, following flax than they did following small grain.

In cooperation with the Montana Agricultural Experiment Station, the department has grown flax successfully for 9 years on the same land at the Judith Basin substation without decrease in yield. Similar results were obtained in 5 years of continuous cropping on dry land at the Huntley, Mont., field station. While it is not good farm practice to grow flax continuously on the same land, because of the danger of loss from wilt and other diseases, these experiments show that flax does not deplete the soil fertility rapidly.

NEW WAY TO PRESERVE.

Vegetables Preserved by Fermentation Method Used Abroad—Make Containers Air-Tight.

The fermentation method widely used abroad in preserving string beans, beets, cabbage, cucumbers, and other succulent garden crops, is described in a notice just issued by the United States Department of Agriculture.

Sauer kraut and pickles put up in this way are fairly well known in this country, but comparatively few persons have thought of trying it as a household measure for preserving these and other vegetables. Those who like acid foods and who have too few canning containers to hold their surplus products may find this method useful. The following description of the method of fermenting vegetables has been prepared by one of the bacteriologists in the Bureau of Chemistry, who has been experimenting with this process.

The vegetables are not cooked, but are put down in a salt brine in any nonmetal water-tight container and are sealed up with paraffin and are otherwise made air-tight. Under this treatment lactic acid will develop and this acid, the value of which as food has been recognized, acts as a preservative. Whether Americans will develop a taste for such fermented foods, highly prized in Europe, is open to question, but the investigator believes that many will find the process well worth trying.

To Preserve Cucumbers.

Wash the fruit if necessary and pack into a clean, water-tight barrel, keg, or crock. On the bottom of the barrel place a layer of dill and a handful of mixed spice. Add another layer of dill and another handful of spice when the barrel is half full, and when almost full add a third layer. If a keg or crock is used, the amount of dill and spice can be reduced in proportion to the size of the receptacle. When the container has been filled within a few inches of the top, add a layer of covering material—beet tops or grape leaves—about an inch thick. If any spoilage should occur on the surface, this layer will protect the vegetables beneath. Press down with a clean board weighted with bricks or stone. Do not use limestone or sandstone.

Make a brine by adding 1 pound of salt to 10 quarts of water. To each 10 quarts of brine so made add two-thirds of a quart of vinegar. The vinegar is used primarily to keep down the growth of injurious bacteria until the lactic-acid ferment starts, but it also adds to the flavor. Add sufficient brine to cover the material and allow to stand 24 hours. Then make air-tight, as described below. The time necessary for complete fermentation to occur depends upon the temperature. In a warm place only five days to a week may be necessary; in a cool cellar three to four weeks.

Beets and String Beans.

The strings should be removed from string beans before they are put up. Beets, of course, require careful washing to remove all dirt before brining. If it is desired, when finally the beets or string beans are to be eaten, to wash out the brine and serve them as fresh vegetables, the addition of spice when they are put up is not necessary. Proceed as with cucumbers.

Make the Containers Air-Tight.

There always will be more or less bubbling and foaming of the brine during the first stages of fermentation. After this ceases a thin film will appear which will spread rapidly over the whole surface and develop quickly into a heavy, folded membrane. This scum is a growth of yeast-like organisms which feed upon the acid formed by fermentation. If allowed to grow undisturbed it will eventually destroy all the acid and the fermented material will spoil. To prevent this scum from forming it is necessary to exclude the air from the surface of the brine. This should be done by either of two methods, 24 hours after the vegetables have been packed.

Perhaps the best method is to cover the surface—over the board and around the weight—with very hot, melted paraffin. If the paraffin is sufficiently hot to make the brine boil when poured upon it, the paraffin will form a smooth, even layer before hardening. Upon solidifying, it effects an air-tight seal. Oils, such as cottonseed oil or the tasteless liquid petroleum, may also be used for this purpose. As a measure of safety with crocks, it is advisable to cover the top with a cloth soaked in melted paraffin. Put the cover in place before the paraffin hardens.

The second method, which may be used with barrels or kegs, is to pack the container as full as possible and then replace the head. In using this method for fermentation of beets, cucumbers, or string beans, add the board and weights as described above and allow to stand for 24 hours before heading. During this period most of the gas first formed escapes and the container then may be headed up tight, first removing the board and weights. Then bore an inch hole in the head and fill the barrel with brine, allowing no air space. Allow bubbles to escape. Add more brine if possible, and plug the vent tight. If the barrel does not leak, fermented products put up in this manner will keep indefinitely.

After sealing with paraffin the containers should be set where they will not be disturbed until the contents are to be used. Any attempt to remove them from one place to another may break the paraffin seal and necessitate resealing. If the containers are not opened until cold winter weather, the vegetables should keep without spoilage until they are used up. If opened in warm weather, they are likely to spoil quite rapidly unless the paraffin is reheated and the container resealed immediately. In the case of cucumbers and chayotes, it is preferable, if enough material is available, to use the method of packing in kegs or barrels, as described above.

Only those vegetables which can not be kept by storing or early ones that are not available later in the season, should be preserved. Late beets, for example, can be better kept in the cellar.

The method of putting up cabbage by fermentation has a number of advantages over the present process of making sauerkraut and is described in another article.

A circular describing the fermentation method is now available for distribution from the States Relations Service of the United States Department of Agriculture.

SWEET-POTATO PEST.

Sweet-Potato Leaf-Folder Found at Brownsville, Tex., and in Louisiana.

Sweet-potato growers are warned to be on the alert against a new insect pest, the sweet-potato leaf-folder, which was found in 1916 in injurious numbers in the region of Brownsville, Tex. It has been noted also in Louisiana. Field workers of the Bureau of Entomology of the United States Department of Agriculture who have studied the new pest at Brownsville found it can be controlled by careful spraying. Arsenate of lead, used at the rate of 1 pound of powder to 50 gallons of water, or zinc arsenite, used at the rate of 1 pound of powder to 40 gallons of water, were found effective. These sprays destroyed from 93 to 96 per cent of the larvæ on the sweet-potato vines.

The sweet-potato leaf-folder constructs a shelter by folding a leaf or drawing two leaves together with silk which it spins for the purpose. As it increases in size it devours most of the leaf except the larger veins and midrib. In 1916, at Brownsville, Tex., the pest was first observed about the middle of September. By the middle of October the caterpillars had become so abundant that it was found advisable to spray immediately. When done early one spray application may be sufficient, whereas if treatment is delayed until a large number of larvæ have spun cocoons, two or more applications may be necessary in order to effect complete control.

Natural enemies of this insect in Texas are the jackdaw or boat-tailed grackle and the spined soldier bug.

BETTER SAUERKRAUT.

Food Specialist Describes Revised Process Which Makes Saving of Early Cabbage Possible.

That sauerkraut can be made only from late or fall cabbage is a belief general in many parts of the country. In connection with the recent announcement of the fermentation method of preserving vegetables, a food bacteriologist of the United States Department of Agriculture declares that sauerkraut of excellent quality can be made from cabbage maturing at any season of the year. The essential points under the revised method recommended by the specialist, which, it is believed, also makes a superior product, are the use of only mature, sound cabbage, scrupulous cleanliness throughout the process, and proper care of the surface of the brine after fermentation is completed. This is the process:

Remove the outer green leaves of the cabbage, just as in preparing for boiling. If an instrument for chopping is not available, quarter the heads and slice off the part of the core remaining on each quarter. Inexpensive shredding machines are now sold upon the market, but if these are not available the quarter heads may be cut into thin slices with a large knife. Pack the shredded cabbage immediately in a clean water-tight receptacle such as a cider or wine barrel, keg, or tub. Except in the case of large families, 4 or 5 gallon earthenware crocks are preferable. This quantity after opening can be used up before spoilage begins.

As the cabbage is packed, salt at the rate of 1 pound to 40 pounds of cabbage should be added and distributed evenly. When the barrel or crock is nearly full the cabbage should be pressed down as firmly as possible and covered with a clean board. It is desirable, but not essential, that a cloth be placed over the cabbage before the cover is put into place. The salt soon extracts a considerable amount of the cabbage juice, and a sufficient weight of clean brick or stone should be added to cause the brine to rise above the wooden cover. Do not use limestone or sandstone for weights as the action of the acid produced by fermentation on these substances destroys the keeping quality of the brine. Tubs and covers made of yellow or pitch pine should not be employed as such woods cause disagreeable flavors.

The container then is set aside and fermentation allowed to proceed undisturbed. If the weather is cool or a cold cellar is used, 3 to 5 weeks may be necessary for the fermentation to be completed; if in a warm room, 10 days to 2 weeks. Scum should not be allowed to grow on the surface of the brine. As soon as gas bubbles cease to rise the scum should be removed and a layer of hot melted paraffin about one-fourth to one-half inch thick should be poured upon the brine while very hot.

If the sauerkraut is made during the fall and stored in a cool place, there is no absolute necessity for a layer of paraffin. The low temperature will prevent decomposition. The popular idea that sauerkraut made from early cabbage will not keep is based upon the fact that the fermentation occurs in warm weather and the rapid growth of scum soon destroys both brine and kraut, if the surface is not properly protected. Vinegar at the rate of 1 quart to 25 pounds of cabbage will prevent decomposition which sometimes takes the form of a soft and slippery product.

EVERY WEED AN ENEMY.

Gardeners Will Find That Early Weeding Means Less Labor Later.

Every weed is an enemy of the "soldiers of the commissary" who are making gardens.

All these troublesome vagrant plants, that gain footholds in the garden, forage upon the plant food and water which should be available to build up food plants.

They stunt some vegetables by stealing their sustenance and crowd out and shade others.

From morning until night weeds that are allowed to grow in a garden work steadily against the interests of the gardener, and the longer they are left undisturbed the greater becomes their capacity for harm.

If you have not begun to free your garden crops of the weed enemies that are probably attacking them now, you should lose no time in beginning your campaign. It is a warfare that you will have to wage, off and on, all season, but if you bring superior force into play early, you will be able to confine the enemy to a straggling guerilla offensive that will cause little destruction.

In this warfare the hoe is your heavy artillery and is to be depended upon chiefly for action in the open. Weeders are the most effective weapons for close action. Neither tool, however, will wholly do away with the necessity for a hand-to-hand struggle to uproot the persistent weeds that grow closely about the stems of the smaller plants you wish to protect and which yield only when they are pulled bodily up by the thumb and finger.

The fight on weeds should begin as soon as it is possible to distinguish easily between them and the garden plantlets. It is even possible to do much effective work in killing weeds between the rows before the young vegetables make their appearance, provided the exact location of the planted seeds is marked.

The gardener should choose a bright, sunny day for weeding. At such a time even weeds which are only partially severed from their roots will have little chance of surviving the withering rays of the sun. If weeding operations are conducted on a cloudy or damp day, however, many of the weeds that are incompletely severed will make fresh growth.

Weeding does more than free the garden of undesirable plants. The digging incidental to removing the weeds also serves as a cultivation. As soon as the weeds have been dug up the roughened ground should be carefully smoothed with a rake. This will incorporate air in the soil, form a dust mulch which will aid in preventing the loss of moisture through evaporation, and will tend to bring to the surface and expose to the sun weed roots and sprouting weed seeds which otherwise might produce plants.

LEGUMES FOR DAIRY COWS.

Home-grown Hay Is Economical for Dairy Farmers.

The dairyman who raises an abundance of leguminous roughage establishes a basis for an economical home-grown ration which makes it unnecessary for him to purchase protein-rich feeds. Good, properly cured hay from any of the common legumes has a high percentage of digestible protein. The following table shows the comparative values of several common roughages and concentrates.

Crop.	Yield per acre.	Digestible protein per acre.	Digestible carbohydrates per acre.	Digestible fat per acre.	Total of nutrients (fat × 2½) per acre.
	Tons.	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Alfalfa hay	2½	530	1,950	45	2,581
Cowpea hay	1½	393	1,011	30	1,471
Red-clover hay	1¼	190	982	45	1,273
Peanut vines, nuts removed	1	132	740	60	1,007
Soy-bean hay	1¼	292	980	30	1,339
Sweet-clover hay	2	430	1,538	28	2,337
Oat-and-pea hay	1¼	207	917	38	1,209
Timothy hay	1	60	850	24	970
Corn silage	8	176	2,400	112	2,828
One ton bran	.....	250	832	60	1,217
One ton corn meal	.....	138	1,380	70	1,676
Velvet beans	1½	360	1,209	42	1,663

This table shows that an acre of good alfalfa furnishes twice as much protein as a ton of bran, four times as much as a ton of corn meal, and nine times as much as an acre of timothy. When the ration consists of an abundance of silage and good legume hay, cows of moderate production often require but little grain. Cows which give more than 25 or 30 pounds of milk daily require the addition of concentrates if high production is to be maintained. In view of the probable shortage in grains all dairymen should make every effort to provide an abundance of leguminous hay by growing legumes suitable to their soils and sections.

USE NATIVE SOY BEANS.

Imported Soy Beans Are Mixture of Many Varieties and Undesirable for Seed.

During the past few months very large quantities of Manchurian and Korean soybean seed have been received at Pacific coast ports and distributed to some extent in different parts of the United States. Although imported mainly for industrial purposes, it has been brought to the attention of the United States Department of Agriculture that some of the seed has been offered for planting purposes at prices much below those of American-grown beans. Much of this seed is exceedingly undesirable. The farmer is advised not to plant imported seed, as disappointment with the crop will almost certainly result.

Throughout the Orient where the beans are largely produced the seed is bought up by the merchants and stored at railway stations. No grading is attempted, the stored beans being of all varieties and mixed more or less with sand and trash. The exporters buy the beans from the merchants simply by weight, but before shipment the beans are graded only as to color of seed and cleaned. Nearly every lot contains several varieties resembling each other only in seed color.

The United States Department of Agriculture has tested over 1,000 varieties of soy beans received from different parts of the Orient, and the great majority of these are much inferior to the best varieties commonly grown in the United States. Even small lots of imported seed have been found more or less mixed, in some cases as many as 12 distinct varieties being found in one sample. With many sorts it is impossible to ascertain the varieties from seed color alone. Such seed sometimes produces plants ranging from 10 to 30 days apart in time of maturity.

In the United States much attention has been given to the breeding of pure adapted varieties, and there are now about 20 satisfactory sorts on the market. The department feels that any farmer planting imported seed is taking an unwarranted risk, and that he is justified in planting American-grown seed even at higher prices. Seed of all the American varieties most generally grown is still available, and information as to where it can be obtained may be had on application to the department or the State experiment stations. It is urged that industrial purchasers of soy beans do not sell the imported seed for planting, and that seedsmen also avoid offering such seeds for sale.

TO CAN WITHOUT SUGAR.

Fruit for use in pies or salads or as stewed fruit can be put up or canned without the use of any sugar at all, according to the canning specialists of the department. They, therefore, advise those who, because of the high price of sugar, have been thinking of reducing the amount of fruit they put up, to can as much of their surplus as possible by the use of boiling water when sugar sirup is beyond their means. Any fruit, they say, may be successfully sterilized and retained in the pack by simply adding boiling water instead of the hot sirup. The use of sugar, of course, is desirable in the canning of all kinds of fruits and makes a better and ready sweetened product. Moreover, most of the fruits when canned in water alone do not retain their natural flavor, texture, and color as well as fruit put up in sirup. Fruit canned without sugar to be used for sauces or desserts must be sweetened.

Canning Fruits Without Sirup.

Can the product the same day it is picked. Cull, stem, or seed, and clean the fruit by placing it in a strainer and pouring water over it until it is clean. Pack the product thoroughly in glass jars or tin cans until they are full; use the handle of a tablespoon, wooden ladle, or table knife for packing purposes. Pour over the fruit boiling water from a kettle, place rubbers and caps in position, partially seal if using glass jars, seal completely if using tin cans. Place the containers in a sterilizing vat, such as a wash boiler with false bottom, or other receptacle improvised for the purpose. If using a hot-water bath outfit, process for 30 minutes; count time after the water has reached the boiling point; the water must cover the highest jar in container. After sterilizing remove packs, seal glass jars, wrap in paper to prevent bleaching, and store in a dry, cool place.

If you are canning in tin cans it will improve the product to plunge the cans quickly into cold water immediately after sterilization. When using a steam pressure canner instead of the hot-water bath, sterilize for 10 minutes with 5 pounds of steam pressure. Never allow the pressure to go over 10 pounds.

PLANT MORE BEANS.

Profitable Crop for Late Planting—Gardening Failures Due to Poor Soil or Careless Methods.

"When discouraged, plant beans."

This is the cheering injunction which the United States Department of Agriculture is sending to the gardeners of the country who have had poor luck with other crops.

"There is no widely adapted garden crop that will do so well on poor soil and nothing that is nearly foolproof as beans," says a statement of the department. "The limits of the planting season also are elastic. The gardener may give his backward onions or beets another chance to make good and still have time to fill in their places with beans if they fail. Beans of the garden and field sorts may be planted in the latitude of Washington for a mature crop until the middle of July, and string beans may be planted all through August. In the latitude of New York, beans may be planted throughout June.

"Black Valentine is a very hardy variety and Green Pod Stringless is very prolific. Limas are more exacting in their requirements than other beans."

As a result of a recent survey of 100 boys' and girls' club gardens in a typical community, the statement points out, the United States Department of Agriculture finds that where failures have occurred in gardening this year, they have been due in general to shade, poor soil, or one or more of the following mistakes:

(1) Failure in preparing for the garden to dig deeply enough and pulverize the soil sufficiently. (2) Too thick planting. (3) Too deep planting. (4) Ridging the garden and planting on ridges instead of keeping the ground level. This causes the water to drain away from the plant. (5) Planting too early, especially corn, lima beans, and cucumbers. (6) Too many light, surface waterings. Roots seek water, and a wet surface causes a growth of roots there, which are later parched by the sun. Such watering tends also to form a hard crust over the surface. In general, there should be less watering and more hoeing. Keep a loose layer of soil on top to retain the water that is present. If you must water, soak things well, hoe as soon as the soil dries a little, and then leave the garden unwatered several days, rather than sprinkle lightly each day. (7) The raising of too many different vegetables attempted.

Instructions concerning bean culture may be had by writing to the United States Department of Agriculture for Farmers' Bulletin 289.

Much milk spoils quickly because it is kept uncovered in warm kitchens. Close observance of the doctrine, "Keep perishable food, especially milk, cool, clean, and covered continuously," may make a striking difference in the food bills of many families.

If the soil is thoroughly infested with wild carrot, a short rotation of crops, including an intertilled crop, as corn, potatoes, or beans, is the simplest and most effective remedy. The intertilled crop should be given a little extra attention, particularly late in the season after "laying by," to make sure that none of the weed survives. Before seeding to grass a special effort should be made to build up the fertility of the soil by plowing under barnyard manure or other organic fertilizer.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JULY 4, 1917. No. 48

SECRETARY OF AGRICULTURE URGES EVERY HOUSEHOLD TO CAN AND DRY SURPLUS FRUITS AND VEGETABLES

Every housewife this year should restore to her home the often overlooked home industries of canning, preserving, pickling, and drying of perishable fruits or vegetables. The large number of new back-yard gardens which have been planted this year shortly will begin to yield their extra harvest of beans, peas, carrots, beets, sweet corn, and tomatoes. The regular supplies also will reach the markets and, as happens each summer, the local supply at times will exceed immediate consumptive capacity. Not to conserve much of this surplusage of valuable food would be sinful waste.

The present food and labor situations are such that no household is justified in looking to others to release it wholly from individual responsibility and constructive action in saving and conserving food. All any home should expect of others is to supply those foods which can not be produced effectively by its own members. The railroads will be burdened with the transportation of staple foods and civil and military necessaries from localities of production and manufacture to districts incapable of supplying their own needs. It follows that all locally produced foods, conserved by home methods, lessen the winter pressure on transportation agencies and also release similar products of factories for other purposes.

I urge every household, therefore, to can all surplus perishable products for which they have containers and to dry and keep in paper any additional surplus suitable for such preservation.

Canning calls for no special skill and for little equipment beyond a washboiler and jars. Fresh products, cleanliness, and heat are the chief requirements, as even sugar is not essential for canning fruits under modern procedure. Fruits and vegetables, moreover, can be dried efficiently in the sun, over a range or gas stove, or before an electric fan. Homemade shallow trays of wood or heavy wire screen are the chief equipment required. Drying is a time-tried home industry; conservation of food by drying is largely a matter of restoring to the home great-grandmother's method of seeing that her family had good food in winter as a relief from a monotonous diet of root vegetables. Canning and drying can be practiced as effectively in a city house or apartment as on a farm or in a suburban dwelling.

Canning, of course, already is a profitable industry for women and children in thousands of homes and I trust will become almost universal this season. To aid the home conservation movement, the Department of Agriculture has issued a new Farmers' Bulletin on home canning and another on home drying of fruits and vegetables. These free pamphlets should be read and followed in every household which wishes to translate patriotic impulse into concrete service.

JUNE 22, 1917.

D. F. Houston

105407°—17

PINK BOLL WORM.

Secretary Requests $500,000 to Keep out Destructive Cotton Pest—Now Near Texas Border.

If the vast cotton-growing industry of the United States is to be saved from a grave menace, the pink boll worm now in Mexico near the Texas border must be kept from entering this country, the Secretary of Agriculture has declared in letters to Representative Lever, chairman of the House Committee on Agriculture, and Senator Gore, chairman of the Senate Committee on Agriculture and Forestry. Secretary Houston asks for an emergency appropriation of $500,000 with which to protect the United States against this most destructive of all cotton pests. In emphasizing the destructiveness of the insect he points out that it has reduced the Egyptian cotton crop in the infested districts nearly one-half in the last few years.

The pink boll worm, Secretary Houston tells the committee chairmen, is distributed in Mexico much more generally than was at first supposed. It now extends through the entire Laguna district, covering an area of some 12,000 square miles. Seed for planting has been sent from this district to other points in Mexico nearer the United States, undoubtedly carrying infestation to those districts. The danger to the United States has been heightened recently by the establishment of a cottonseed-oil mill at Piedras Negras on the Mexican-Texas border to which large quantities of seed infested by pink boll worms are being moved. Investigations by specialists of the United States Department of Agriculture show that mature insects capable of flight for considerable distances have been emerging from the seed stored at this border town within a few miles of Texas cotton fields.

The importation of seed cotton and cotton seed from Mexico into the United States was prohibited as soon as the presence of the pink boll worm in Mexico was discovered late last summer. In addition, the importation of cottonseed products will be safeguarded by regulations to be issued soon. It is contemplated that the emergency appropriation, if it is made available, will be used to fight against the entrance of the pest by the creation of a cotton-free zone 50 to 100 miles wide in Texas next to the Mexican border, by the making of surveys in Mexico, if practicable, to determine the actual distribution of the insect and by the extermination of local infestations in Mexico near the American border.

The proposed cotton-free zone would be established in cooperation with the State of Texas, the officials of the State already having indicated their desire so to cooperate. The growing of cotton in such a zone would be effectively prohibited by the promulgation of Federal and State quarantines prohibiting the movement from the State or within the State of any cotton grown in the zone. Some 4,000 bales of cotton are grown in the area to be included in the proposed cotton-free zone, and most of the tillable land is adapted to the cultivation of sugar cane, rice, vegetables, and other valuable crops.

The surveys in Mexico to determine the distribution of the pink boll worm would be made cooperatively with Mexican authorities and ultimately would be the basis for determining the possibility of undertaking, in cooperation with the Mexican Government, the extermination of the pest in that country. If it should be determined, Secretary Houston points out, that it is feasible to exterminate the pink boll worm in Mexico, and if satisfactory cooperation with the Government of Mexico should be arranged, the most effective and economical method of preventing the entrance of the pest into the United States would be to undertake its extermination in Mexico. This probably would involve large expenditures, but the nature of the emergency might fully justify them.

The extermination of local infestations in Mexico near the United States border would be undertaken with the cooperation of the Mexican Government or local Mexican authorities. By this means the pest would be kept so much the farther from the cotton fields of the United States.

Fifty thousand dollars was made immediately available in the regular agricultural appropriation bill for 1918, approved March 4, 1917, to prevent the establishment of the pink boll worm in the United States. This fund is now being used, the Secretary states, in inspecting and safeguarding the territory surrounding 10 cottonseed-oil mills in Texas which had received considerable quantities of seed from Mexico before the importation of seed was prohibited, and in the inspection of border commerce and the enforcement of the cottonseed quarantine.

In summing up the need for the emergency appropriation of $500,000, Secretary Houston says in his letters to the committee chairmen: "The pink boll worm situation in Mexico proves a grave menace to the cotton crop of the United States, and the Nation should not fail to adopt any measure of control which appears to offer protection from this pest. The appropriation now requested is a matter of the greatest urgency and to be of service should be made available at the earliest possible date."

Home canning is kitchen patriotism.

RAISE RABBITS FOR MEAT.

Production of Belgian Hares or Other Rabbits Possible in City Back Yards.

Rabbits, which have proved a valuable source of food in Europe during the present war, may well be raised more extensively in America by way of reducing the drain on the ordinary meat supply, according to biologists of the United States Department of Agriculture. The business of growing rabbits, the specialists point out, can be carried on by youths and adults not engaged in military or other national service, or in regular industrial employment. The animals may be raised in back yards of cities and towns as well as on farms.

The Belgian hare, says a statement by the department, breeds rapidly, matures quickly, and produces a palatable and highly nutritious meat. The cost of production is less than that of any other meat, not excepting poultry. The supply can be greatly increased within a few months without requiring space that may be needed for the production of crops. Practical experience has demonstrated that rabbit meat can be produced in unlimited quantities at a cost of about 6 cents a pound, and by utilizing lawn cuttings and other vegetation that would otherwise be wasted the cost can be made even lower.

The Belgian and Flemish giant rabbits are recommended for meat production, as the ordinary tame rabbit is smaller and develops more slowly. Stock of Belgian hares may be bought from breeders in nearly all the States at $1 to $3 each. They may occasionally be had from pet-stock dealers. Fancy pedigreed stock is not required for meat production.

Rabbits are easily kept. They eat hay, grass, lawn cuttings, and green vegetation of many kinds. Females should be allowed to breed when 8 or 10 months old, and during the year should raise four litters of about six young each. Well fed, the young reach marketable size when 3 to 4 months old and average from 5 to 6 pounds live weight.

The department has published a bulletin on raising rabbits which will be helpful to those who wish to engage in this pursuit.

HIGH-GRADE MILK PAYS.

City Milk Contests Encourage Better Quality Milk — Simple System of Grading.

Much interest on the part of both the milk producer and the consumer in cities in the quality of the local milk supply can be aroused by the city milk contest where "surprise" samples are taken. Such a city milk contest was first held in Baltimore, Md., by the Dairy Division of the United States Department of Agriculture in 1911. It has been adopted since in many other cities, especially on the Pacific coast. The city milk contest advertises those dairies which obtain high scores as to the quality of their milk, and results in the bettering of the supply for the entire city. Frequently prizes are given by boards of trade or like organizations to those dairymen who win the highest scores in such contests.

The method of conducting such a city milk contest as used in Greenville, S. C., is typical. Milk samples were collected in the streets from each dealer each month for a year. One dairy which delivered 100,000 quarts of milk during the year was awarded an average score of 95. Another, which delivered 150,000 quarts, average a score of 88.5. A third, which delivered 30,000 quarts, had an average score of 81. The women's club of the city presented the owner of each of the three dairies with a loving cup in recognition of the excellent quality of the milk furnished to consumers.

In that contest the grading of the milk was determined by means of the milk score card, which allows 35 points for bacteria, 25 for flavor and odor, 10 for visible dirt, 10 for fat, 10 for solids not fat, 5 for temperature, and 5 for the appearance of bottle and cap, making a total of 100 points.

In conducting a city milk contest dealers are classified according to the kind of milk they handle, as certified, raw, or pasteurized milk. Once each month for 11 months, or oftener if desired, a pint of milk was collected from the delivery wagon of each dealer. The bacterial count, fat, and solids not fat content of each of the samples were determined in the laboratory. The temperature of the milk on the load was taken when the samples were collected. The twelfth month two pint bottles of milk were collected from the delivery wagon of each dealer. One was analyzed for bacterial count, fat, and solids not fat; the other was scored for flavor and odor and visible dirt. The quantity of visible dirt was determined by passing the milk through a sediment tester, collecting the sediment on a cotton disk.

In order to score 35 points in bacteria the milk sample must contain under 500 bacteria per cubic centimeter. A competent judge scored the sample for flavor and odor; 25 points were awarded when the flavor and odor were considered satisfactory. The sample of milk free from sediment received a score of 10, the cut depending on the quantity of sediment present. Milk containing 4 per cent or more of fat was given 10 points, and samples containing less were cut in proportion to their fat content. Samples containing 8.7 or more of solids not fat received 10 points and were cut when below that quantity. When the sample showed the temperature on the load was below 50° F. it was awarded 5 points, and received a cut when above that temperature at time of collection. In order to obtain 5 points for bottle and cap the bottle must be clean, free from flaky glass, and the mouth completely covered with a cap which protects the pouring lip.

To ascertain the figure taken to represent the quality of milk supplied by each dealer the average bacterial count of the year's samples was determined. The average was given a number of points out of 35 which such a count was allowed on the milk score card. The fat and the solids not fat were likewise averaged. The flavor and odor score, sediment, and bottle and cap scores given by the judge were added, and likewise the temperature score.

In reporting the respective standing of the various dealers they were classified according to their scores. Those dealers whose milk scored between 75 and 80 were put in the same class; likewise dealers scoring between 80 and 85 or 85 and 90 were classified together.

It was not deemed wise to report the scores to a tenth of a point. For all practical purposes milk supplied by dealers within a 5-point classification is on a par so far as the comparative quality of the product of each is concerned.

By collecting samples from the delivery wagons and dealers the quality of milk actually delivered to the consumers is determined. The publication of the standing of each dealer in the contest gives the consumer a definite indication as to the quality of milk which his dealer is supplying. For business reasons dealers become anxious to produce milk of high quality. Such a contest is valuable in raising the standard of milk supplied to the entire city.

TURN GARBAGE INTO PORK.

Use of city garbage for feeding hogs will add materially to pork production and also substitute a more economical garbage-disposal system for the wasteful practice of burying or burning city waste, according to the United States Department of Agriculture. To make city waste most available for feeding to pigs, every household must be required and trained to separate its household wastes carefully so that dangerous material, like broken glass or bits of metal, burnt matches and wood, and other inedible material, will not be mixed with food scraps, vegetable parings, and bones useful for feeding. Cities should enforce existing ordinances requiring every household to separate wastes carefully and to put all feeding material in one container and all inedible trash into the ash receiver.

Utilization of garbage for feeding animals will save the people in the cities an important sum of money annually and contribute materially to the local food supply.

Dwellers in small towns, and even in the suburbs and on the outskirts of the large cities, in many instances also could help meat production. Many vacant lots provide a suitable site for a hog pen which will annoy no one, and some of these lots are large enough to grow green feed to aid in fattening pigs. While the average family will not have enough garbage to fatten a pig, several families who jointly build a pen and purchase one or two pigs can fatten them cooperatively at little or no additional expense.

Can! Summer investment of time and money, small; winter returns in food and health, large.

BE CANNY.

Get that canning impulse.

Make your hoe this summer keep your can opener busy next winter.

Get ready for canning season now. Regrets are the only things ever canned in the jars you forgot to order.

Can nothing that can be kept without canning. Dry such vegetables as corn, string beans, navy beans, mature Lima beans, okra, etc.

You can brag about your garden all winter if you have your canned evidence on the dinner table.

Concentrate products, especially soup mixtures, so that each container will hold as much canned food and as little water as possible.

Really there is nothing to canning fruit and vegetables except care, cleanliness, fresh products, jars, and heat.

Establish a home canning firm, "Father, Mother & Co." Don't forget the little "co.'s."

SHEEP-TICK CONTROL.

Tick-Infested Sheep Do Not Thrive—Two Dippings Necessary to Kill All Ticks.

There is some danger, according to agricultural authorities, that the sheep tick may become a source of considerable loss to farmers and stockmen in those localities in which the dipping practiced for some years in order to eliminate sheep scab has been largely discontinued. Dipping for scab has helped to control the sheep tick in those localities, which consequently have been comparatively free from this pest for a number of years. Now, however, it appears that sheep ticks are becoming a nuisance in the areas where systematic dipping was formerly carried on, and they are likely to cause a great deal of damage if steps are not taken to control them.

The sheep tick is a wingless parasitic fly which spends its entire life on the sheep. It obtains its food by puncturing the skin and feeding on the blood and lymph of the animal. The irritation thus caused, especially in the case of lambs, is great, and the constant drain of blood may in time become serious. Infested sheep are so restless that they do not feed well and are in general less thrifty than tick-free flocks. These conditions hamper the growth of wool and in general lower the market value of the sheep. From a purely economic point of view, therefore, dipping is a profitable practice.

Two dippings are regarded as necessary on account of the life habits of the tick. The first dipping will destroy all the mature ticks on the animal, but it can not be depended on to destroy those in the pupal stage, in which they are protected by a hard shell. In this shell the tick remains from 19 to 24 days. A second dipping, therefore, 24 days after the first will find these insects in an unprotected state, having emerged from the pupal shell in the interval between the dippings.

There are a number of solutions which are effective in destroying sheep ticks. Among these coal-tar-creosote, cresol, and nicotine dips may be purchased ready prepared. The lime-sulphur-arsenic solution can be made at home, but it is difficult to prepare and its poisonous qualities necessitate special precautions in its use. Complete details in regard to the various kinds of dips and the most effective methods of administering them are contained in a new publication of the United States Department of Agriculture, Farmers' Bulletin 798, The Sheep Tick.

The cost of dipping varies considerably, depending upon the cost of labor, fuel, and material. In the sheep-growing sections of the West, however, it may be estimated at from 2 to 3½ cents a head for each dipping. Where only a few sheep are kept, a portable galvanized-iron vat may be used or a canvas dipping bag. Where large flocks are cared for, however, or where a farmer is in the sheep business permanently, it is best to provide proper facilities for the work, and a permanent dipping vat is the only practical solution.

Canned green peas and yellow peaches help fight the blues.

See that your garden produces dry beans, cabbage, potatoes, and root crops that can be kept without canning.

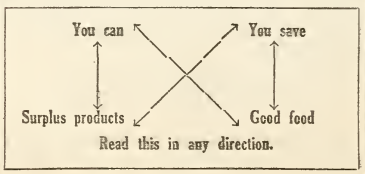
MOTOR FEES VARY WIDELY.

States Lack Uniform Basis for Registration and License Charges.

It cost motor-vehicle owners in the United States in 1916 an average of $7.36 per car for registration and license fees, according to figures compiled by the Office of Public Roads, United States Department of Agriculture, in Circular 73, just issued, Automobile Registrations, Licenses, and Revenues in the United States, 1916. New Hampshire secured in 1916 a gross revenue of $19.67 and Vermont $19.02 for every motor car, while Minnesota, where the registration is for a 3-year period, received only about 50 cents annually for each car. In South Carolina and Texas no annual registration fees were required.

No well-developed and definite basis exists for determining in a logical manner the fees to which different cars shall be subject. In some States the fee is based on the net weight of the vehicle; in others, the carrying capacity, the horse power, or some combination of these factors is used. Requirements for registration or licensing of chauffeurs, owner operators, and dealers vary widely. In most States motor cars are taxed also as personal property. In Idaho, Iowa, Michigan, New York, Oklahoma, Pennsylvania, and Vermont the registration fees are in lieu of all other taxes.

The tendency recently is to increase the registration fees required for motor trucks, usually in proportion to weight, in view of the deteriorating effects of heavy truck traffic on roads.



MAKE MORE CHEESE.

More "Cheddar" in the Factories and More "Cottage" in the Homes Is Urged.

Believing that American Cheddar cheese is an excellent substitute for meat, the United States Department of Agriculture desires to encourage the manufacture of that product in every locality adapted to its production. The price of cheese has greatly increased in the last few years. As a result great interest has been created in the possibilities of cheesemaking, both on the farm and in the factory.

Because of the skill necessary to make a good and uniform product, the advisability of making American Cheddar cheese in a small way on individual farms is questionable, dairy specialists of the department believe. Under those conditions it is much more practicable to make cottage cheese.

The quantity of milk available within a reasonable distance and the climatic conditions determine the advisability of establishing a cheese factory in a community. The income derived from milk made into cheese, compared with the other uses, can be calculated from these figures: Costs of manufacturing and marketing average about 2.5 cents a pound, and milk yields from 2.7 to 2.9 pounds of cheese for each pound of butter fat.

About 4,000 pounds of milk daily in the flush of the season is the quantity necessary for the economical operation of a cheese factory, and can be handled by one man. To supply the milk about 200 cows are necessary and should be within 4 miles of the factory, otherwise the cost of hauling the milk is too great. Cool nights and an abundance of cold water are necessary for cheese making. Parts of the United States naturally adapted to the manufacture of this product are: The region of the Great Lakes, the mountain sections of the North, West, and South, the coast districts of the West, and the northern edge of the country. On account of hot nights and the resulting gassy and acid milk, a good quality of cheese can not be made readily during the summer in the Great Plains States nor in the lowlands of the South, as has been demonstrated in numerous trials.

The United States Department of Agriculture will supply the necessary information and plans for cheese factories in localities where the operation of such factories is feasible, and, in cooperation with State extension departments, will furnish to a limited extent assistance in the work.

Let empty cans and jars wait for fruit. Don't try to make fruit wait long for containers.

SAVE GARDEN SURPLUS.

Plans to Conserve Vegetable Food Not Eaten Fresh Should Be Made Now by Home Gardeners.

The crop of vegetables from home gardens promises to be unusually large in practically all sections of the country this year, says the United States Department of Agriculture in a statement just issued. Home gardeners, therefore, it is pointed out, should begin now to plan so that the products raised by them will be used to the best possible advantage, without waste.

"There is likely to be an unusually large production of vegetable from small home gardens in most communities this year," says the statement. "Home gardeners therefore should lay their plans carefully, so that they will be in a position at the appropriate time to make efficient use of their garden produce, both by immediate consumption and by preservation by canning, drying, or in other ways, so that no good food will be wasted.

"A very material saving can be effected in the food bill in many instances by having the meals consist more largely of the fresh home-grown vegetables and less extensively of the nonperishable foods bought from grocery stores. By following this plan also garden owners will relieve somewhat the demand for the nonperishable foods.

"Even with liberal use in the family diet in a fresh state, however, there will be considerable surpluses of vegetables from many home gardens. These should be saved in some way. Canning is the method most usually employed, but it is possible that cans and jars can not be obtained in sufficient quantities this year to pack the surplus perishables. In such cases many products easily can be preserved by drying.

"By this method surplus water is driven off by placing sliced products on trays in the sun, over a stove, or before an electric fan. The dried foods can be kept perfectly in paper bags or boxes sufficiently tight to exclude insects. Soaking in water will bring the products back practically to their original texture and they may then be cooked like fresh vegetables.

"In putting up vegetables and fruits for future use the home gardener may find the following suggestions useful:

"If you can obtain cans and jars only in limited numbers, can tomatoes and other vegetables which can not be dried easily and such fruits as you prefer in a juicy form. Wherever possible concentrate succulent foods, such as tomatoes.

"Preserve or jam the fruits and berries which you prefer in that form, and put them in glasses sealed with paraffin or in wide-necked bottles.

"Put fruit juices in ordinary bottles.

"Dry practically any common vegetable except asparagus, egg-plant, radishes, lettuce, and the like, and most fruits except strawberries and native grapes. The more important of the vegetables that are usually dried are sweet corn, snap and string beans, shelled beans, shelled peas, and the root crops. Tomatoes, though consisting in large part of water, are dried successfully by many immigrants from southern Europe.

"If a considerable number of cans or jars are at your disposal so that vegetables may be canned be sure to include the more nutritious, such as green beans and peas."

ASSISTANT TO THE SECRETARY.

The Secretary of Agriculture recently announced the appointment of Clarence Ousley, State director of agricultural extension work in Texas, as assistant to the Secretary for a temporary period. Mr. Ousley, among other duties, will supervise, under immediate direction of the Secretary, all the publication and informational activities of the United States Department of Agriculture.

Mr. Ousley has been editor of Farm and Ranch, Dallas, Tex., managing editor of the Galveston News, Galveston Tribune, and Houston Post, and founder of the Fort Worth Record which he edited until 1913. He became a member of the American commission in 1913 and made a tour of Europe to study rural cooperation. He has been director of extension work in Texas since 1914. He is a graduate of the Agricultural and Mechanical College of Alabama.

Mr. Ousley will visit Texas from time to time as the demands necessitate, and will keep intimately in touch with the work of that State through the States Relations Service of the Department of Agriculture. He will resume the duties of director of extension work in Texas when either the necessities there require or the emergency in Washington permits.

Home preparedness—cans loaded with food.

That rubber ring you put on a preserving jar helps you to stretch your income.

The awful question "What shall I have for dinner?" is easily answered if your shelves are full of home-canned products.

HORSE OWNERS WARNED

Carbon Bisulphid Sold Fraudulently as Remedy for Bots and Worms—Use Carefully.

Carbon bisulphid, a cheap and readily obtainable compound, is being unduly exploited under various names and at exorbitant prices as a treatment for bots and worms in horses, according to information which recently has come to the United States Department of Agriculture. This chemical is a recognized remedy for these ailments, but the department warns farmers against paying $5 for a quantity, sold under a fanciful name, that probably could be bought at any drug store for 25 cents.

Not only is this compound being thus sold fraudulently, but false claims are made for it and directions for its use improperly prescribed. Carbon bisulphid is poisonous, and if used indiscriminately by inexperienced hands may do more harm than good, the specialists say. The vapor of this substance is suffocating, and inflammable when mixed with air, and must be kept away from all fire. As the method of administering this compound is not altogether easy, it is suggested that the treatment should be given under the direction of a veterinarian.

The usual method of administering is to give about 1 fluid ounce divided into three doses and to supplement it with a purgative. For yearling colts half the amount, in similar dosage, is sufficient. The carbon bisulphid is administered in sealed capsules soluble in the stomach. Gelatin capsules sealed with glue or otherwise prepared by the druggist so there will be no leakage may be used. So-called 4-dram capsules will actually hold about 3 drams of carbon bisulphid; 2-dram capsules about 1½ drams. An instrument known as a balling gun or balling iron will facilitate the administration of the capsules. Inhaling of carbon-bisulphid fumes by a horse may have serious consequences, and it is accordingly important not to use leaky capsules or crush them during their administration. The day preceding the treatment the horse is fed lightly and all food is withheld in the evening. A purgative of aloes (½ to 1 ounce) or a pint of raw linseed oil is given. On the day of the treatment 3 drams of carbon bisulphid in a gelatin capsule or capsules are given to the horse, still fasting, at 6 o'clock in the morning, 3 drams at 7 o'clock, and 3 drams at 8 o'clock—making in all 9 drams of carbon bisulphid in either 3 or 6 capsules, according to

the size of the capsule used. These doses are for a mature horse; a yearling colt may be given half the quantity.

When the remedy is used for the removal of "nose fly" bots, which occur commonly in certain Western States, it should be given during the fall of the year, as bots of this species leave the upper part of the intestinal tract after this time and establish themselves in the lower intestine, where they are but little affected by ordinary medicinal treatment.

You put a lid on waste every time you seal a preserving jar.

POTATO RESTRICTIONS REMOVED.

Restrictions on importations of potatoes into the United States from Canada and Bermuda will be removed after July 1 under an amendment to regulations of the Federal Horticultural Board, signed recently by the Secretary of Agriculture. The amendment also permits the importation of potatoes from any foreign country into Hawaii for local use only.

The ruling in regard to Bermuda and Canada is based on the fact that inspection of potatoes imported from those two countries during the last three years has shown that no serious potato diseases not already occurring in the United States exist in those regions.

Potatoes for local consumption are to be allowed to enter Hawaii from any country, since few potatoes are grown on the islands, and there is therefore little danger of diseases damaging local truck crops. All shipments of potatoes arriving in Hawaii, however, still will be inspected before they can be removed from the docks.

The quarantine against potatoes from Newfoundland and the islands of St. Pierre and Miquelon, on account of the potato-wart disease, remains in full force and effect.

Don't have an empty preserving jar in your neighborhood next fall.

If you have more preserving jars than you can fill, lend them to a neighbor who will make them work for the Nation.

Some neighbor surely can eat or put up surplus products from your place.

A quart of canned peaches or tomatoes on the shelf is worth a bushel rotting on the ground.

See that the shelves in your preserving closet sag just a little this year.

REDUCE FOOD COSTS.

Let Cereals Replace More Expensive Materials—Use Cheapest and Most Plentiful Cereal.

The most practical means of reducing table expenses without decreasing the wholesomeness and adequacy of the diet lies in increased use of cereal foods, especially boiled grains, mushes, and breads made of corn meal and cereals other than wheat.

Cereals contain most of the important food elements which the body needs and yet are comparatively inexpensive. They are primarily a source of starch, needed by the body to yield energy. They furnish also considerable quantities of protein, one of the most important and usually one of the most expensive food elements, needed to build the body and keep it in repair. In addition, cereals furnish mineral matter, fats, fiber, and, especially if part of the bran is left in, little-known substances which regulate activities.

Cereals therefore may be used as the relatively inexpensive basis for meals. It then becomes necessary only to eat with them comparatively small quantities of higher-priced food to make up a proper balance among the needed elements.

Cereals Interchangeable.

When animal foods or other nitrogenous foods, fruits, and vegetables also are used in the diet, the various grains may be interchanged freely as availability, cost, or preference dictates. The starch of all the cereals is practically the same. Protein, fat, and mineral matter vary somewhat in the different kinds, but so slightly that the difference need not be considered in the ordinary mixed diet. In such a diet therefore corn or oat meal, for example, may be satisfactorily substituted for wheat when the latter is scarce, without detracting from the wholesomeness of the meals.

Forms of Cereal Food.

The most common form in which cereal food is consumed is bread. The food value of bread, however, comes from the cereal of which it is made, and it makes little difference whether we get our cereal ration in baked or boiled form. If cereals are to be made a more important feature of the diet, mushes and boiled grains, as well as baked doughs, should be eaten in greater quantity. Practically any of the cereals may be used in making some type of bread. Wheat has been most used because its gluten makes possible the raising of the dough with yeast. Flours and meals of the other grains, however, may be made into baking-powder breads, and many of them can be substituted for part of the wheat flour in making yeast breads.

Breakfast foods should be chosen carefully if economy is desired, since the form in which the food is purchased largely determines the cost. Meals from which mushes may be made may be obtained for a few cents a pound, while specially prepared grains may cost up to 48 cents or even more per pound. Bulk breakfast cereals such as oatmeal commonly may be purchased at lower prices than the same kinds put up in cartons.

One way to lessen the cost of breakfast foods is to buy whole grains from a feed store and grind them coarsely in a coffee or other hand mill. The cracked grains when salted properly, boiled thoroughly, and served with butter or sugar and cream or milk, make wholesome and palatable foods. These home-ground grains, used alone or with flour, also may be used satisfactorily in bread making. Boiled grains, such as rice, barley, corn meal, or hominy, may be used in the same way, or any of these may be combined into dishes with cheese, eggs, or meat, which add both flavor and nitrogenous food elements.

The important place of cereals in the diet and ways in which they may be used to reduce living expenses are discussed in Farmers' Bulletin 817, Cereal Foods, recently published by the United States Department of Agriculture.

The sooner into the can, the fresher the taste next winter.

PEANUT SEED FOR SOUTH.

Department Urges Increased Planting of Peanuts—Ample Supply of Seed.

The United States Department of Agriculture is urging extension workers in the South to make a special campaign for doubling the peanut acreage in the South this year and has perfected an arrangement with peanut handlers to withhold ample seed stock of the Spanish variety from their trade and keep it available for seed purposes until July 1 if necessary. This stock is available at $2.50 per bushel of 30 pounds f. o. b. Virginia and Texas shipping points.

Because of the shortage of food and feed and of animal fats and vegetable oils of all kinds throughout the world the indications are that the demand for peanuts will increase daily the next few years. A recent circular sent out by the

Office of Extension Work in the South to its cooperating agents calling attention to these facts, gave a list of peanut handlers who had agreed with the department to withhold a part of their stock for seed purposes, and urged that steps be taken at once by county agents, national defense committees, business men, and others interested in the food campaign to urge increased planting of peanuts and to make arrangements for securing the necessary seed. Within three days from the mailing of the circular that office was advised by one of its county agents in Alabama that in cooperation with a local business man he had ordered a carload of seed by wire which was to be distributed to the farmers in his county without cost, payment to be made on a toll basis with peanuts at harvest time. He added that they expected to be able to handle a second carload in the same way.

The department heartily approves this plan of handling peanut seed in the present emergency, as it will enable farmers who would find it difficult or impossible to buy seed at the present high prices to plant a maximum acreage of this crop now, on oat and other available lands. The advisability of adopting a similar plan for their localities is therefore suggested to all interested and county agents, especially in counties of the lower South, are being urged to use this emergency method of making seed available.

The Spanish peanut may be planted as late as July 1 in the South generally, and in the lower coast tier of counties as late as July 15.

Can for home use in glass containers, as tin cans may be scarce.

EARWIGS: NEW INSECT PEST.

The European earwig, an insect which feeds upon garden and field crops and causes annoyance in houses, has made its appearance in widely separated parts of the United States. In a recent publication of the United States Department of Agriculture, Bulletin 566, The European Earwig and Its Control, an entomologist, Mr. D. W. Jones, describes the adult earwig as a reddish-brown insect about three-fourths of an inch long. It has, at its posterior end, a pair of forceps which in the male diverge and curve in a semicircle and in the female are nearly straight. Poisoning, spraying, and trapping are methods of control recommended and described in the bulletin.

Pickle or brine suitable vegetables in crocks.

SAFETY IN MUSHROOMS.

No Simple Test for Distinguishing Between Poisonous and Edible Varieties.

There is no simple test for distinguishing between edible and poisonous mushrooms, according to specialists in the United States Department of Agriculture. For example, the common belief that any mushroom may be eaten with safety if the skin can be peeled readily from the cap is quite unfounded. Peeling of this character is possible with many poisonous species. The presence of insects on mushrooms, too, is no proof that they are safe for human consumption. Insects infect some of the most poisonous as well as some of the best species of fungi. Again, there is a common belief that if poisonous mushrooms are soaked or boiled in salt water they will do no harm. This is a dangerous and unfounded supposition.

The only safe mushrooms to eat are those which are gathered by a collector who knows exactly what he is doing. In order to make easier the all-important distinction between poisonous and nonpoisonous growths, the department has just published a new bulletin entitled, "Some Common Edible and Poisonous Mushrooms," Farmers' Bulletin 796. The illustrations and text of this bulletin should enable collectors to avoid doubtful species. The authors point out, however, that it is most important to pick only those which it is absolutely certain are harmless. No attempt should be made to gather rare forms or those species which are not readily recognizable.

The most common edible mushroom is known to scientists as *Agaricus campestris*. This variety is not only cultivated commercially, but is widely distributed and is abundant in the wild state. The cap is fleshy and hemispherical in shape, but later becomes expanded and nearly flat. It is smooth, in color white or light brown, and the flesh is white and firm. The gills are white at first, later become pink, and finally turn a blackish brown. The stem is stout, smooth, and furnished with a ring. This type of mushroom is readily recognized, but there is some possibility that it may be confused with an *Amanita*, of which there are several varieties, most of them extremely poisonous. The risk of mistaking the common mushroom for one of these may be avoided if the fungus is not picked until the gills are pink or turning to brown. The gills of the *Amanita* remain white. These poisonous fungi, however, may be distinguished from edible mushrooms with white gills by the presence of a veil or of a volva, a membranous envelope or sack which completely surrounds the plant in the young state. After this volva breaks away a part remains on the top of the cap around its margin as scales and as a broken cup at the base of the stem. Certain edible varieties do have such volvas, but, as they are rare and the poisonous species common and dangerous, the only safe plan is to leave alone all the fungi which possess this feature.

In addition to describing the varieties of edible mushrooms, the bulletin already mentioned gives a number of recipes for their preparation. Many people, it is said, believe that mushrooms are best eaten with no other seasoning than salt, pepper, and butter. The fungi may, however, be prepared in any of the ways which have been found suitable for oysters.

The scarcer fresh vegetables are, the more valuable are the canned ones.

RENEW WORN-OUT PASTURES.

Sweet Clover Is Valuable Soil Renovator and Excellent Forage for Stock.

"Grow sweet clover" is the answer for poor soil or worn-out pastures which no longer support live stock profitably, according to investigators of the United States Department of Agriculture, who have found that thousands of acres of sweet clover are furnishing annually abundant pasturage for all kinds of stock on soil where other crops made but little growth.

In many portions of the Middle West sweet clover bids fair to solve serious pasturage problems, according to Farmers' Bulletin 820, "Sweet Clover: Utilization," just issued. Native pastures which no longer provided more than a scant living for a mature steer on 4 or 5 acres, when properly seeded to sweet clover, will produce sufficient forage to carry at least one animal to the acre throughout the season. Dairy cattle, horses, sheep, and hogs all do well on sweet clover. Land which is too rough or too depleted for cultivation or permanent pastures which have become thin and weedy may be improved greatly by drilling in, after disking, a few pounds of sweet-clover seed per acre. Not only will the sweet clover add considerably to the quality and quantity of the pasturage, but the growth of the grasses will be improved by the addition of large quantities of humus and nitrogen to the soil.

Sweet clover has proved to be an excellent pasturage crop on many of the best farms in the North Central States. In this part of the country it is often seeded alone and pastured from the middle or the latter part of June until frost, or it may be sown with grain and pastured after harvest.

If the grownups think canning is a difficult process, the children will show them how.

TRAPS STOP MOLES.

Raider Destroys Harmful Insects and Need Not Be Exterminated.

The case against the garden mole is not clear-cut. The damage that it does by burrowing in the soil and uprooting plants is somewhat offset by its helpful habit of feeding upon insects and in working the soil. A specialist in the Bureau of Biological Survey of the United States Department of Agriculture, who has made a careful study of this underground explorer, concludes that judgment against the mole may be rendered when it actually invades the lawn or garden—the overt act—but that no general warfare against an insect-eating mammal should be encouraged. In Farmers' Bulletin 583, The Common Mole of Eastern United States, a report is made of investigations in the life habits and methods of destroying this animal when necessary.

Trapping is the most effective means for putting an end to mole depredations. Although this bulletin considers the common garden mole of eastern United States, to a great extent the instructions for trapping it apply to all American moles. Three general types of traps—the harpoon, the scissors-jaw, and the choker—are on the market, and most of them give good results. Specific instructions for handling any particular make should be obtainable from the manufacturer.

In general, a mole trap can be successfully operated only when set on that part of the runway that is near enough to the surface to upridge the sod or soil. A little observation will soon enable one to distinguish the newer and more frequently used runways from those that have been partially or wholly abandoned. In placing the trap, one of the stretches of the run that seems to be leading in some definite direction should be selected rather than one of the turns of a labyrinth that may not be traversed every time the mole comes into the vicinity. Before setting the trap it is well to ascertain the course of the burrow by thrusting down a lead pencil or a stick of about the same size. The trap selected should then be lined up with the course as nearly as possible; that is, the jaws of the scissor-jaw type should be astride it, the loops of the choker type should encircle it, and the spikes of the harpoon type should be directly above it. If the harpoon type is used, it is best to force the impaling spikes into the ground once or twice to facilitate their penetrating into the burrow when the trap is later sprung. This type of trap injures the pelts of moles, and is not recommended for use when it is desired to preserve the fur.

Repeated leveling of the mole ridges on the lawn by means of a roller not only tends to discourage the animals from making further incursions, but prevents that injury to the grass roots which otherwise would result, and restores to the lawn its more sightly appearance.

The mole is blamed for much damage it does not do, the specialist explains, because other small animals, particularly voles or meadow mice, deer mice, and sometimes ordinary house mice use the convenient runways of the mole for marauding. Most of the injury to seed grains, tubers, and roots of cultivated plants is directly chargeable to these intruding rodents, as an examination of the tooth marks on the damaged products will show.

From an examination of the stomach contents of 200 moles taken in all months of the year it was found that earthworms and white grubs constitute the bulk of the food. Beetles and their larvæ and other insects that enter the ground, spiders, centipedes, cocoons, and puparia also form a part of the diet. In one stomach were found the remains of 171 small white grubs, in another 250 ant puparia, in another 10 cutworms ,and in another 12 earthworms. The presence of starchy material in some of the stomachs is proof that the mole occasionally finds vegetable food, as certain seed grains softened by contact with the moist soil, an acceptable addition to its worm and insect diet. Seed coats of corn, wheat, oats, and peanuts have been identified in a few stomachs.

Moleskins have found a ready market in recent years, owing to the gradually decreasing number of wild fur-bearing animals. A new industry amounting to many thousands of dollars annually might be developed in this country in the utilization of moleskins, the specialist believes. It is not feasible to attempt to breed moles for their pelts, but farmers' boys or others may easily earn small profits by capturing moles found damaging crops or seriously interfering with garden plats, cemeteries, or lawns. Information regarding addresses of firms that will purchase moleskins, the care of skins, and home tanning will be furnished by the Biological Survey on request.

INOCULATE BROOD SOWS.

Brood sows, regardless of the stage of pregnancy, may be safely treated for hog cholera, according to specialists of the United States Department of Agriculture. If infection has already appeared in a herd, it is generally conceded that without treatment the loss will be from 80 to 85 per cent of the herd, and that pregnant sows will likely abort, while sows that live through the disease will not breed until they have recovered fully. Even if the disease does cause the sows to abort, the treatment may bring the sows through and enable them to recover more rapidly than if they were not treated.

The best method of inoculation for brood sows—whether by the simultaneous or serum-alone treatments—is a matter of choice, the specialists say, as the results have been practically the same in field experiments with both methods. In this connection department specialists point out that the simultaneous treatment, when properly applied to healthy brood sows, does not produce sterility, as some persons may believe. The fact that hyperimmune sows—that is, sows that are used for serum production and have received enormous doses of hog-cholera virus—generally farrow normal litters, confirms this statement, the specialists say.

TRAP FOOD RAIDERS.

Persistent Efforts Against Rats and Mice in Households Will Succeed.

Rats and mice have too much their own way in some households. Their unhampered excursions into pantries and larders will menace food conservation efforts this year. Get a number of traps and fight them. Persistent trapping will put an end to these raiders, according to specialists in the Biological Survey of the United States Department of Agriculture. Poisons properly safeguarded are effective, but their use in dwellings usually is undesirable because none is known which, when eaten by a rat, will prevent decomposition of the body.

For both rats and mice the common guillotine or "choke" traps with a wooden base and wooden bait pan are recommended rather than those having metal base and pan. These traps should be set with a light trigger. Oatmeal usually is the most effective bait. A few grains of it should lie on the trigger pan and a few more be scattered near the trap. A change of baits is advisable from time to time. Pumpkin or sunflower seeds, corn meal, bits of fish or toasted cheese may be used. Baits will not be attractive while food is accessible. Remove supplies that are being damaged and, as far as possible, keep them in ratproof containers. The department will furnish detailed information as to ways of controlling these food wasters.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JULY 11, 1917. No. 49

LOOKING FORWARD IN FARMING.

Seasonal Suggestions in Anticipation of Problems in Cultivation, Marketing, and Preparation the Next Few Weeks.

NORTH AND WEST.

Review of Activities and Suggestions from the Office of Extension in the North and West.

Among the immediately practical needs suggested and undertaken by the more than 500 county agents in the Northern and Western States working in cooperation with practically 100,000 farm bureau members in the way of increasing and stimulating food production may be mentioned the following:

1. They have come to the immediate aid of the farmers in the control of plant diseases through demonstrations in the spring spraying of fruits, the treatment of oats for smut, potato seed for scab, and are now stimulating potato spraying for blight in all potato-growing sections. The results of campaigns put in by the agents with the farmers of their counties in treating seed oats for smut in 1915 averaged an increase of 11 bushels per acre and in 1916, 8 bushels per acre, from the fields of farmers cooperating with the agents in this work, and at a cost in 1916 of less than 10 cents per acre.

Securing Fall Seeds.

2. The agents this spring, through cooperation and organization of farmers, secured for them an adequate seed supply, particularly as regards spring wheat, beans, and potatoes, and are now cooperating with the farmers to insure an adequate supply of fall seed wheat of highest character through selection of fields of wheat free from disease and most vigorous in growth and arranging with the owners for saving such seed as a local supply. This is an extremely valuable service and simply needs a leader to call attention to the matter and organize to secure results.

3. They have aided the farmers in all sections where necessary in securing funds through cooperation of bankers and other business agencies at reasonable rates for the purchase of seeds, fertilizers, machinery, and adequate work stock for most efficient farming, and this work will continue as the needs are learned throughout each county.

(*Continued on page 8.*)

MARKETING PROBLEMS.

Advice of Immediate Importance from the Office of Markets and Rural Organization.

Put common storage houses for apples and potatoes in shape. Make such improvements now. Do not put this matter off until harvest time.

Make arrangements now for the handling of your perishable fruit or vegetable harvesting arrangements, especially as regards labor, picking and packing-house foremen, and have packing houses in order. Have crate and box material on hand. Make every possible provision for the proper and careful handling of perishable produce.

If precooling facilities are available, have them in shape for handling the maximum capacity, efficiently and quickly.

Remember we must conserve as efficiently as possible all the food products produced. The farmer will do his share only if he exercises every care in his handling, picking, and packing operations so as to eliminate all possible waste in transportation, as on the care exercised in handling depends largely the condition of the produce when it reaches the market.

Shipper and Carrier.

Heavier loading of cars will be necessary if all our perishable crops are to be moved to market. To prevent undue deterioration, there must be full cooperation between shippers and carriers. The shippers can aid greatly in making possible the successful movement of our perishable food products, through more careful attention to handling, to maturity of product at time of harvesting, to the securing of quick cooling by cool night temperature, by precooling or quick handling to refrigerator cars, and last but not least to proper stowing and bracing in the car to facilitate quick refrigeration and provide safety of lading from breakage in transit. Due attention to proper strength of packages is also essential.

It is not sufficient for the fruit and vegetable growers simply to order their shipping

(*Continued on page 2.*)

IN THE SOUTH.

Summary of Suggestions Going Out from the Office of Extension in the South.

Don't dig your sweet potatoes for storage until they are fully matured. Let them mature in the ground and you will have larger potatoes, and therefore more food per acre. The mature potato will keep better.

Plan now for the safe storage of sweet potatoes in some modern storage house, where they can be kept for winter and spring market, without loss from rotting. Sweet potato storage houses have been erected in many sections of the South. Wherever the crop has been greatly increased, the attention of farmers and business men should be devoted to this important problem. Provision should be made for gradual marketing of the crop.

Let everyone plant a "Fall Food Acre" in July or August. A well planned and well tilled Fall Food Acre will provide the family with ample food and save drawing on the general food supply of the country during the months between now and January. Put in string beans, peas, beets, carrots, onions, kale, cabbage, spinach, and collards in rows. If seed can be bought at reasonable prices, plant Irish potatoes for fall and winter use. About half of the acre can be planted in this way, and the other half in turnips and rape, either in rows or sown broadcast. See your county agent or write the State agricultural college or the Department of Agriculture for any further directions. Crops obtained from this acre should prevent the necessity of drawing on spring-grown crops for the food of the family during the fall. An old saying in the Southwest is: "Sow turnips in July, wet or dry."

Late Cultivation.

Do not neglect the late cultivation of corn, cotton, grain sorghums, peanuts, soy beans, and all other cultivated crops. If the ground is kept clean of weeds and grass with a good earth mulch on the surface, it will improve the chances of a larger yield.

105408°—17

Save the hay and forage crops. See that the hay is properly cured and stacked or put away in the barn. If the hay is to be sold, get it baled and properly stored for safe keeping. Let no forage crop go to waste. We must save grain in the feeding of live stock, and every pound of forage will count.

In Texas and Oklahoma plow the winter wheat land in July. Early and thorough preparation of the seed bed greatly increases the chancesof a larger yield. In the Southeastern States, also, early and thorough preparation of wheat land is important.

Seeds and Fertilizers.

Secure or save your seed for the fall planting of wheat, rye, and oats. Rye is a crop of great importance. It stands the winters well.

See your fertilizer dealers, or call a meeting of your farmers' cooperative society through which you usually buy commercial fertilizers, and make up the order for fertilizer for your winter grains and clovers as soon as possible. The railways are doing everything within their power to economize in transportation. The railroad companies are compelled to carry the great traffic of the Army and Navy, besides the ordinary interstate trade of this country. In ordinary times fertilizers are shipped in minimum carload lots. Orders have been given that freight cars hereafter must be loaded to the maximum. Heretofore the cars have carried only 47 per cent of their total capacity. We must make them carry 100 per cent to insure getting all of our fertilizers. You will therefore be helping the country if your needs can be known early, so that all orders may be bulked and shipped in maximum carload lots.

Live Stock and Pasturage.

Keep all live stock on pasture and save grain. Plant grazing crops for hogs, beef cattle, and milch cows. If you make your plans ahead, prepare your land and get the crops in, you will be able to save a great deal of the valuable grain crops which are needed for human food.

Save the breeding stock. Do not sell cows, brood sows, or good laying hens. Turn the unproductive stock into meat, but save these others. In war time, as well as other times, the country needs meat, and especially needs milk and eggs. These are among the most important items of human food. If the breeding stock is sold or slaughtered, the power of the entire country to produce will be greatly lowered.

Fill the silo as soon as the crops are ready. Save as much as you can by using this valuable adjunct for feeding the farm live stock.

Keep in close touch with your county agent and county home demonstration agent and your county agricultural council of safety or defense. These men and women are anxious to serve you and serve the best interests of the country in the producing and saving of food and feed.

As Rudyard Kipling says:

It ain't the guns nor armament, nor funds that they can pay,
But the close cooperation that makes them win the day.
It ain't the individual nor the army, as a whole,
But the everlasting teamwork of every bloomin' soul.

MARKETING PROBLEMS.

(*Continued from page 1.*)

packages in advance. The manufacturer should be directed to ship them at the earliest possible date. Unless this is done it is probable that in many sections the growers will be without packages when the harvesting season arrives. Storage space should be arranged for, even though it requires additional handling.

Careful Grading.

It is of the utmost importance that fruits and vegetables be carefully graded before being shipped to the markets. The high cost of production makes this of greater importance this year than ever before. Shipping the diseased with the sound, the overripe with the properly matured specimens, and failure to classify the product to meet the various demands, result in deterioration, decay, and inefficient distribution. The unmerchantable and inferior grades should be converted into by-products, or discarded, and the good fruit or vegetables separated into classes according to their quality, in order to minimize contamination and therefore prevent waste as well as to reduce the cost of marketing.

An example of the effect of poor grading can be seen in the marketing of the early potatoes. Poor grading to a large extent caused the glutting of the market and consequent loss to the producers, dealers, and all concerned.

Cooperative Shipping.

Shipping organizations can pool the output of their members and load cars of some commodities to full capacity for large markets. Cars should be loaded and unloaded by shippers in the shortest possible time, and any work in regard to diversion of cars in transit should reduce delay as much as possible.

Southern growers should study data published by the Bureau of Crop Estimates with a view to determining what northern crops seem to be short and plan their fall plowing, etc., in preparation for planting the crops for which there seems likely to be the greatest need next spring. Both the condition and the acreage, as well as the estimated yield, should receive careful consideration.

Farmers should estimate their labor needs as far in advance as possible—that is, not only the number of the help which will be needed, but the approximate time when they will be first needed and the length of time that they will be needed in each locality. Farmers should cooperate in every way practicable with local, State, or national employment bureaus.

Small Markets.

Shippers should pay more attention to small markets for their produce, especially in the event that there may be an overproduction of a certain commodity. It is highly desirable that crops of which there is a very heavy production, such as may be the case with potatoes, be distributed over as wide a territory as possible. Shippers should try to cultivate the small town markets and hence increase the number of outlets for such crops, thus preventing gluts in the larger markets and conserving the supply of other more important commodities, such as wheat.

In case a grower has difficulty in disposing of a surplus of a given commodity, he should attempt to conserve as large a proportion as practicable by means of canning and evaporation and providing good common storage on his farm for such crops as apples, potatoes, cabbage, and onions. More attention might also be paid to the conserving of root crops, such as turnips. Every precaution should be taken to eliminate waste and loss due to decay.

Write for Information.

Producers who are not already in touch with the United States Bureau of Markets should write to that bureau to find out if there is any way in which information which is at the disposal of various projects can be of benefit to them in the marketing of their crops. In addition to the market news service, which is maintained regarding meat, hay, and grain and the proposed market news service for dairy products, it is probable that daily market bulletins will be issued during August on the following fruits and vegetables: White potatoes, sweet potatoes, onions, apples, pears, cantaloupes, watermelons, grapes, peaches, celery, and dried beans.

Among other reports which are published more or less regularly by the United States Bureau of Markets and which should be of considerable value to producers may be mentioned: Weekly Carlot Summary, Weekly Market Review, Storage Reports. At present storage reports are being issued monthly on butter, case eggs, frozen eggs, cheese, lard, frozen and cured meats, and frozen poultry; semimonthly and later monthly reports of cold-storage holdings of apples will be issued beginning not later than October.

SAVE YOUR OWN VEGETABLE SEED.

Department Points out Necessity for Increasing Supply of Vegetable Seed for Next Year's Planting—Gardeners Urged to Save Their Own Seed.

By W. W. Tracy, Sr., *Superintendent of Testing Gardens*, and A. J. Pieters, *Agronomist in Clover Investigations, Bureau of Plant Industry.*

[To be issued at once as a leaflet for distribution when needed.]

Under normal conditions of commerce considerable quantities of vegetable seed are imported by American seedsmen from Europe. Since the beginning of the European war these importations have decreased, until at the present time they are relatively small. Furthermore, America has been called upon to furnish certain vegetable seeds to Europe, and this has increased the tendency to deplete the stocks available for our own use. In view of these facts, it is believed that the supply of vegetable seed in this country should be conserved and augmented to the fullest extent possible.

While the practice of saving seed in the home garden can not be generally recommended because of the difficulty in keeping stocks pure, it is quite feasible to save seed of many vegetables for one or two seasons. After that, the stocks should be renewed. At the present time the United States Department of Agriculture urges every gardener who has the facilities to do so to save seed for next year's planting. If this is done it will assist in the return of normal conditions, not only in the supply of vegetable seed, but also in the price to the gardener.

Save Seed from the Best Plants.

There is but one general principle underlying the production of good vegetable seed; that is, save seed from the best plants.

For seed purposes all vegetables may be classed as annuals or biennials. Annuals are such as ripen a crop of seed the same season as that in which the seed is sown; biennials ripen seed the season following that in which the seed is sown.

Annuals.

Beans.—The saving of beans for seed is a relatively simple matter. Beans are self-fertile, so there is no danger of mixing, but care should be taken to pick out a few of the best plants from which to save seed. Do not eat any of the beans from these plants and save only such pods as get too old to eat. Select good plants with pods corresponding to the sort planted and save all pods. When ripe and dry, shell the beans and, anywhere south of Philadelphia, treat them with carbon bisulphid to kill weevils. The insects are in the beans at the time of harvesting and can be killed by placing the shelled beans in a tight box within which is a shallow saucer into which a little carbon bisulphid has been poured. Close the box tight as soon as the carbon bisulphid is poured and keep it shut and away from flame for a few hours. Carbon bisulphid is very inflammable. North of Philadelphia, the carbon bisulphid treatment is less essential.

Peas.—Save seed from the best plants and treat as instructed for beans. It is important to select seed from plants showing the desired characters; for example, if seed is wanted of an early sort, save seed of plants maturing the first usable pods. Resist the temptation to put these on the table. The earliest peas will tend to yield an earlier crop the next year than those from the same row that ripen last. This principle also applies to other qualities. If the pea is a dwarf, save the pods from the most dwarf and not from the tallest plants in the row.

Corn.—Sweet corn is very sensitive to cold and wet. The ears should be allowed to ripen fully on the stalk, if that is possible, before frost and should be cured without exposure even to a light frost. When early corn is grown, as the Golden Bantam, save the earliest ears for seed. In all cases study the characters of the variety grown and select those plants that come nearest the ideal for the variety. Where the corn worm is troublesome, it may be worth while to pull the husks open a little when the corn is partly grown, so as to remove the worms. The husks can then be turned back over the tip of the ear and the ear left to ripen. When the selected ears are picked, turn back the husks, tie them up, and hang them from nails in an attic or barn where there will be a free circulation of air. A few ears will usually yield seed enough for the average home garden.

Vine seeds of all kinds.—Cucumber, muskmelon, watermelon, and squash seeds are so easily saved and so little is needed by the small planter that there is no reason, save the bother of it, why every one should not save his own seed this year. Here, again, it is important that the best fruits be selected according to the kinds that are being grown. Allow the selected fruits to ripen, cut them open, scoop the seed out into a dish, and wash thoroughly with water. When reasonably clean, spread on a paper to dry. Seed growers commonly allow the pulp and seeds to ferment in order to clean the seed, but this is done because it takes too much time to scrape out each fruit. When saving the seed from one or two fruits, which will usually give seed enough for a small garden, the seed can be scooped out nearly clean and the fermenting process is unnecessary.

Tomato, eggplant, pepper, etc.—What has been said of vine seeds applies equally to these fruits. Tomato seed may be scooped out of the *ripe tomato* as well as possible and the mass shaken up with water; allow to settle, and then the water, carrying what pulp it will, carefully pour off. This will usually get rid of nearly all the pulp. Eggplant and pepper seeds are naturally dry and easy to get out.

Lettuce, radish, spinach, etc.—These annuals seed abundantly, and, here again, selection is important. If you are growing a head lettuce, save the plants making the *best head;* do not use the left-overs that have failed to make good, as then the seed will probably produce still less desirable plants the next year. If the heads become quite hard, like a cabbage, it may be necessary to cut the head with a knife. Make two cuts across the top of the head at right angles. If the head is not hard this will not be necessary, as the seed stalk will be able to get through unaided. One lettuce plant will usually make more seed than there is in a 5-cent packet, so not many plants will be needed. The seed ripens unevenly, and when the first seed gets ripe the plant may be shaken over a pan or a paper and the seed collected. When many plants are left to seed, they may be cut shortly after the first seeds are ripe and laid on sheets to ripen.

Spinach seed does not shatter as badly as lettuce. The stalks should be left till quite ripe and when dry be beaten over a sheet so as to knock the seed off.

Radish.—Early planted spring varieties of radish will mature their seed crop the same season. Late sorts are best treated as for beets.

To get the seed the dry pods must be rubbed, to crush the tissue surrounding the

(*Continued on page 8.*)

SWEET-CLOVER PASTURE.

Splendid Pasture Crop from Early Spring to Late Fall—Practically No Danger from Bloat.

With the exception of alfalfa on fertile soils, no other leguminous crop will furnish as much nutritious pasturage from early spring until late fall as sweet clover, when it is properly handled. Live stock thrive on it. Animals which have never been fed sweet clover may refuse to eat it at first, but this distaste can be overcome by turning them on the pasture as soon as the plants start growth. There is practically no danger from bloat from sweet clover, according to Farmers' Bulletin 820, Sweet Clover: Utilization, which has just been issued by the United States Department of Agriculture.

Pasturing Stock on Sweet Clover.

When sweet clover has been seeded two years in succession on separate fields, the fields sown the first year may be pastured until the middle of June, when the stock should be turned on the spring seeding. When handled in this manner excellent pasturage is provided throughout the summer and a hay or seed crop may be harvested from the field seeded the previous season.

Some of the best pastures in Iowa consist of a mixture of Kentucky bluegrass, timothy, and sweet clover. On one large farm stock is pastured on meadows containing this mixture from the first part of April to the middle of June. From this time until the first part of September the stock is kept on one-half to two-thirds the total pasturage acreage. The remainder of the pasture land is permitted to mature a seed crop. Usually from 2 to 4 bushels per acre of recleaned seed is obtained from this portion of the pasture. After the seed crop is harvested, the stock again is turned on this acreage where they feed on the grasses and first-year sweet clover plants until cold weather. The seed which shatters when the crop is out is usually sufficient to reseed the pasture.

It is essential that sufficient stock be kept on the pastures to keep the plants eaten rather closely, so that at all times there will be an abundance of fresh shoots. Grazing induces the plants to send out many young shoots close to the ground, so that when the plants are permitted to mature seed a much larger number of stalks are formed than would be the case if the first crop were cut for hay. Excellent stands of sweet clover will produce an abundance of pasturage for 2 to 3 mature animals per acre, from early spring to the middle of June. Cattle which are pastured on sweet clover alone crave dry food. Straw or hay should be present in the meadow at all times.

Experiments by many farmers in the Middle West show that sweet clover is an excellent pasture for dairy cattle. When cows are turned on sweet clover from grass pastures the flow of milk is increased and its quality improved. Other conditions being normal, this increase in milk production will continue throughout the summer as the plants produce an abundance of green forage during the hot, dry months. If pastures are handled properly they will carry at least one milch cow to the acre during the summer months. Tainting of milk and butter, sometimes reported, may be avoided by taking the cows off the pasture two hours before milking and keeping them off until after milking the following morning.

Excellent for Hogs.

Sweet clover has proved to be an excellent pasturage crop for hogs. It is usually seeded alone and pastured for two seasons. The hogs may be turned on the fields the first year as soon as the plants have made a 6-inch growth. From this time until late fall an abundance of forage is produced as pasturing induces the plants to send out many tender, succulent branches. Pasturing the second season may begin as soon as the growth starts in the spring. If the field is not closely grazed the second season it is advisable to clip it occasionally, leaving an 8-inch stubble, so as to produce a more succulent growth.

An acre of sweet-clover pasture ordinarily will support 20 to 30 shotes, in addition to furnishing a light cutting of hay. For the best growth of the hogs they should be fed each day 2 pounds of grain per hundredweight of the stock. Hogs are very fond of sweet-clover roots and should be ringed before being turned on the pasture. The tendency to root may generally be overcome by adding some protein to the grain ration. Meat meal serves this purpose very well.

Sheep Relish Sweet Clover.

Sheep relish sweet clover and make rapid gains when pastured on it. Care must be taken to see that pastures are not overstocked with sheep, as they are likely to eat the plants so close to the ground as to kill them. This is especially true the first year before the plants have formed crown buds. Yellow biennial sweet clover probably will not suffer from this cause as much as the white species, because the plants make a more spreading growth and are not likely to be eaten so closely to the ground.

Horses and Mules.

Horses and mules do well on sweet-clover pastures. On account of the high protein content sweet clover provides excellent pasturage for young stock. No cases of slobbering have been noted with horses.

There are more rats than human beings in the United States, and every rat is a food waster.

MILK FLOW INCREASED.

Dipping Does Not Reduce Yield—Ticks Take Toll from Blood of Dairy Cows.

"Dipping cows to kill fever ticks actually increases milk yields," says the United States Department of Agriculture in a recent statement. "This is proved in actual experiment and in the results obtained in thousands of dairy herds the owners of which are thorough believers in tick eradication by the dipping-vat method. Careful records prove that lightly infested cows produce 18.6 per cent less milk than free cows, while cows heavily infested produce on an average 42.4 per cent less milk than similar cows freed from ticks. This was established by records of yields kept over considerable periods for ticky herds before they were dipped and for the same herds after they were dipped.

"A herd of 20 lightly ticked cows produced 29 quarts less milk per day, or a loss of 5,800 quarts in 200 days' milking, than 20 tick-free cows of the same kind. Twenty heavily ticked cows produced 67 quarts per day less, or a loss of 13,400 quarts in 200 days' milking, than 20 tick-free cows of a similar breed. The monetary gain from dipping of the lightly infested herd would have been $280 a year; from the heavily-ticked herd a dipping would have given increased profits of $660 a year.

"Here is an actual record from a dairy herd: A dairyman in heavily infested territory dipped his cattle. One week after dipping, his herd of 42 cows gave 10 gallons of milk a day more—an increase of 16.6 per cent from the start. The milk sold for 35 cents a gallon, and he got $3.50 more per day from his herd from one dipping. He had begun to feed the cows instead of the ticks.

"Those who assert that dipping diminishes milk flow judge entirely from the milk production for two or three days immediately following the trip to the vat. It is natural that for two or three days after a milch animal has been driven a few miles and gone through the excitement of dipping, her milk flow will temporarily fall off slightly. The actual figures show that for two or three days there may be a reduction of an average of 10.6 per cent, or about 0.8 of a quart for an 8-quart cow. In three to five days the temporary falling off disappears and if the dairyman would keep records over any long period he would find that getting rid of ticks was increasing his actual milk production from 18 to 42 per cent.

"That dipping cows to get rid of cattle ticks must increase milk flow can readily be reasoned out by anyone who will approach the subject with an open mind and

not let his prejudices fight his pocketbook. Cows can make milk only from blood. It follows that the more blood ticks suck out from them the less material the cows will have to turn into milk. When it is realized that the ticks on a heavily infested animal consume as much as 200 pounds of blood a year, it can be seen that a heavily infested cow will lose by the tick route a large and important amount of milk-making material. When it is realized that the cow can make blood to supply her milk glands only from the feed she consumes, it can be seen that the tick by sucking blood is wasting a lot of good feed that ought to be going to increase milk production.

"It is as unreasonable to estimate the effect of dipping on a cow's yield from the milk she gives for two days after she has been dipped as it would be for a purchaser of a cow to expect that cow to give her full milk record the first day after she had been driven to a new farm and placed in strange quarters. No sensible dairyman would send back a cow because she did not live up to the guaranteed record for a day or two after hse had been shipped to his farm. All the department asks of anyone is to use fair records. Experience with millions of cattle dipped proves conclusively that dipping increases materially and in no way diminishes the year's milk yield or injures the cattle."

THRIFT THOUGHT.

What are you going to do with that half bottle of left-over milk in your refrigerator, Madam Housewife?

The cream has been taken off, but there is good food value in what is left.

Here is one possibility, says the United States Department of Agriculture, for a nourishing dish for either luncheon or supper:

Nourishing Milk Gravy.

Enough for family of two adults and three children. Reduce proportions if for smaller number.

1 pint skim milk,
¼ cup flour,
2 level teaspoons butter or cooking fat,
½ teaspoon salt.

Melt butter or other fat in saucepan. Add flour and salt mixed. Blend. Add milk gradually. Heat, stirring constantly until thick.

Flavor, if desired, with any left-over minced meat or fish which may be on hand, or minced ham or a slice of broiled bacon, crumbled.

Serve on boiled hominy, samp, rice, potatoes, macaroni, or slices of corn or other bread, or toast.

Jars worth as much as ever in winter; vegetables worth more than ever. Home canning pays.

FARM SHEEP RAISING.

Adequate Protection and Convenient Equipment for Flock Possible at Moderate Cost.

Equipment for raising sheep on farms need not be expensive, say specialists in the United States Department of Agriculture. Elaborate and expensive structures do not insure economy in management and are not essential to the welfare of the flock. In mild latitudes, little housing of any sort is needed, but where winters are longer and more severe, some protection from storms is required. Under such circumstances, the buildings in which it is proposed to house the sheep should be dry, well ventilated, and free from drafts, but no special provisions for warmth are required.

Where the flock contains 100 or more ewes, it is desirable to provide a separate building for it. Smaller flocks can be cared for in sections of barns which contain other stock. In Farmers' Bulletin 810, Equipment for Farm Sheep Raising, a new publication of the United States Department of Agriculture, a number of plans are given for different kinds of sheep barns, and also for such other equipment as pens, feeding troughs, hurdles, and fences. A good supply of feed racks, grain troughs, etc., says the bulletin, can be provided at a small expense and will both save labor and prevent waste of feed.

Because of the wide differences in climatic conditions under which sheep are raised, it is impossible to recommend a particular type of building for universal use. A few fundamental principles, however, should be followed no matter what type of building is to be constructed. In the first place, the site should be dry and well drained. Ample yard space should be available adjacent to the main barn or shed, and it is desirable that this should have a southern slope with sandy soil. If, too, the sheep barn is located conveniently to the farmhouse or to other barns, much time will be saved in the performance of routine labor. This is important, because through a part of the year the flock requires attention many times a day.

In planning a barn it is well to remember that shade and protection from heat are necessary for sheep, and that these can not always be obtained in pastures. The building that is cool in summer, therefore, will often give greater comfort to the animals than they can obtain out of doors. More important requisites, however, are dryness and light. Sheep can not possibly thrive in quarters that are damp or dark. In fact, the flock should be shut in only during storms. One square foot of window to each 20 square feet of floor space is considered necessary. The windows should be placed at a height to insure a good distribution of light and, in particular, of direct sunlight for the lambing pens during the period the ewes are lambing.

The ewes suffer greatly if confined in poorly ventilated pens. It is therefore necessary to provide some means of securing fresh air without creating drafts. Where the building is very large, with numerous doors and windows, it is sometimes advisable to build one or two partitions from floor to ceiling. By opening muslin-screen windows on the side opposite to that from which the wind is blowing, fresh air can be admitted without causing drafts. In very cold sections, or where lambs are to arrive in the winter months, specially arranged outlets of foul air and inlets of fresh air will be necessary.

Level and well-drained, clay-surfaced floors are cheap and satisfactory, the only objection to them being that they do not exclude rats. For alleys and feed rooms concrete floors are required.

In the bulletin already mentioned is a discussion, accompanied by drawings, of the plan of a barn intended for the exclusive use of sheep, designed to meet the needs of those permanently engaged in sheep raising on a large scale. The working drawings and bills of materials for this and for the other buildings discussed in the bulletin may be obtained from the Office of Public Roads and Rural Engineering, Department of Agriculture, Washington, D. C. As the supply of the drawings for free distribution is limited, however, it is expected that only those will apply for them who are seriously contemplating building.

The building referred to has 8 large pens, each capable of holding 20 ewes, allowing 12 square feet of floor space and 15 inches of rack space for each ewe, and a small pen for the accommodation of 4 or 5 bucks. The partitions between the pens are formed by movable feed racks so arranged that the attendant can walk down the center to distribute feed. Storage space for 55 tons of loose hay or straw is provided in the mow, and for 1,100 bushels of grain in the storage room on the second floor. This is enough feed, with the exception of silage, it is said, to carry for a period of 5 months all the sheep that can be put in the barn. The silo should have a capacity of 30 tons.

The estimated cost of such a building with materials and labor obtainable at prices prevailing in May, 1916, should be approximately $2,400. These figures do not include feed racks, and the bulletin is careful to state that they should be considered only as a rough guide, because it is impossible to state exactly what the prices of material and labor will be in any locality. The amount of farm labor employed is also an important item in the total expense of construction.

Another set of drawings shows a combination horse, cattle, and sheep barn designed

to accommodate 10 horses, 5 cows, and 63 sheep. Still another design calls for a simple type of closed sheep shed, which is especially adapted for farms in which the main barn has large feed capacity but not sufficient floor space for the live stock. Allowing 12 square feet of floor space per animal, this shed will hold 26 sheep. This shed affords good protection for sheep under any conditions and may be used for winter lambing if the width is increased from 16 to 20 feet. This will enable detachable lambing pens to be set up next the wall and still leave room for a feeding rack for the other ewes.

The bulletin also discusses in detail with illustrations a number of designs for grain troughs, feeding racks, fences, hurdles, lamb creeps, and other equipment. Growers are cautioned that fences that will exclude dogs should be used, although a less expensive fence would suffice for the sheep themselves.

GEESE GOOD GRAZERS.

Goose Raising Not Affected by High-Priced Grains—Little Care Needed.

Geese can be raised in small flocks on general farms, on pasture or nonproductive land, and do not require any material amount of grain. Low, rough pasture land, used for pasturing other stock and containing a natural supply of water offers the best conditions. Many geese are kept in the South to kill weeds, especially in the cotton fields, and their use could well be greatly increased for this purpose. They are good grazers and will do well on grass and forage crops alone, except during the winter months, when they may be fed largely on available roughage, such as clover, alfalfa hay, silage, cabbage, mangel-wurzels, or any waste vegetables. If the grass or forage is limited it may be supplemented by light feeds of common or home-grown grains.

Geese do not need shelter except during cold winter weather, when open sheds may be provided. Goslings are not usually hatched until good pasture is available and need additional feed only for a few weeks. The range of pasture used either for goslings or for geese should be large enough so that the grass will remain clean, or the stock should be moved frequently to fresh land. Coops, barrels, or some other dry shelter should be provided for the young goslings. Geese are very hardy and free from diseases and insect pests.

Surplus fruits, beans, tomatoes, and other vegetables produced in home gardens are allowed to spoil on the vines or rot on the ground. A morning's work would can and preserve such surplusage for use when fruits and vegetables are scarce and high in price.

SILOS SAVE GRAIN.

Can Corn Crop for Cattle—No Tin Needed—Silage Supplies Succulence in Dairy Ration.

Less grain can be fed by many dairymen without reducing milk production, provided they feed more silage and legume hay. Less grain will be available for feeding to cattle, for much more than usual is needed now for human food, and the emergency demands that every effort be made for its conservation. Milk production must be maintained—hence, every effort should be made to substitute other feeds for grain in the dairy ration. To do that the silo will help.

Fruits and green vegetables are canned so as to supply succulent and palatable foods to the family during the winter. Succulence is just as essential to the cow as to a human being. The abundant milk flow obtained from June pasture, to a large extent, is due to the succulence of the grass. Silage provides succulent feed during winter when pasture is not available. With silage in the ration dairy cattle can be kept in the condition of health common to animals on pasture. The digestive system of a cow is well suited for the utilization of large quantities of green grasses and other coarse, succulent material. Silage is palatable and no other feed will combine so well with dry hay and a little grain to produce maximum economical results.

"Siloing" is an excellent way of preserving the mature corn crop or of saving one which for any reason must be harvested before maturity. About 40 per cent of the total food material in the corn plant is in the stalks and leaves. When the farmer harvests only the ears he loses nearly one-half of the crop; on the other hand, when the crop is put into the silo the losses are very small. When drought, frost, or insects attack a field of corn before it is ripe, the entire crop may be lost unless the farmer has a silo ready in which to preserve it.

No feed crops can be so successfully harvested under widely varying conditions as those that are put into the silo. Only in case of drought or frost is it necessary to rush the filling of the silo; rain or dew on the forage does not injure the silage.

The silo at all times, and particularly now, offers to the farmer one of the best means of reducing his feed bills. The present great national emergency places these questions before every farmer who keeps cattle: Have you a silo? If you have not, your herd is not most economically fed; why not build a silo and fill it before frost comes? If you have one, is it big enough to supply all the silage your cattle can eat before the next crop is harvested? If not, build another. You can buy one ready to erect, or you can build it yourself. Home-made silos of concrete or wood can be erected with little trouble.

Call on the extension department of your State agricultural college for advice or write to the Dairy Division, United States Department of Agriculture, for bills of material, with full specifications for silos of different capacities.

KEEP GARDENS GROWING.

Fight Weeds, Cultivate, Water, and Fertilize.

This is the time of the season when the gardener is likely to allow the weeds to get a start in the garden. Right now the plants need every drop of water, and weeds should not be allowed to rob them. Weeds grow much faster than cultivated crops, and if not destroyed will rob the plants of the moisture they need for forming fruit. Those fortunate enough to possess a private waterworks, or who have city water should make use of the hose to supply the crops in the home garden with needed water. The watering should be done in the evening and by the time the sun rises the next morning the water will have soaked in. The soil should be cultivated about 24 hours after each watering in order to prevent the formation of a crust on the surface. Nothing retains soil moisture like a finely broken surface. Never allow soil in the garden to become baked, as moisture is being lost.

It is an excellent plan to water eggplants, peppers, cabbage, cucumbers, melons, celery, and other crops needing highly fertilized soil, with manure water. Have a barrel covered with fly screen in which to prepare and store the manure water. Give each plant an occasional watering with this and the added growth will repay you.

THRIFT THOUGHT.

Don't throw away stale bread, Madam Housewife.

It can be used in many ways in preparing your family's meals.

Here is one use suggested by the United States Department of Agriculture:

Breakfast Rusks.

Dry or slightly toast slices of bread and ends of loaves on the back of a stove or in a slow oven. Crush with rolling pin and serve the fragments with milk or cream and sugar, and fruit, if desired, as a breakfast food.

This product closely resembles some commercially prepared breakfast foods and is obviously less expensive.

FLOUR SUBSTITUTES.

Home-grown Substances May Be Combined Profitably with Wheat Flour in Making Bread.

The South has at its command a variety of foodstuffs which can be used to excellent advantage as part substitutes for wheat flour in making bread and biscuits. Housewives are urged by specialists in the United States Department of Agriculture to try some of these in their bread making. Not only will they be able to effect a saving in household expenses, but by reducing in the South the consumption of wheat flour brought in from other sections of the country, they will be helping materially to leave the railroads freer to transport necessities.

Among the wheat-flour substitutes recommended by specialists for the South are:

(1) Banana, cassava, dasheen, and sweet potato.

(2) Rice and kafir.

(3) Soy beans and peanuts.

The substitutes in group 1 should be mixed with good white flour in the proportion of 1 to 3. The resulting bread is excellent in every way. Only a little less rich in protein than ordinary bread, it is much richer in minerals and other important constituents. Dried bananas should be used in making banana flour; the dasheen and sweet potato may be boiled and then mixed with the flour, or the dried product may be used.

Rice and kafir should be mixed with flour in the same proportion as the substances in group 1—1 to 3. Bread made from kafir is somewhat darker in color but richer in protein and ash than white bread. Brown rice flour mixed with wheat is also somewhat darker in color than white bread, but it is as rich in protein and other food constituents. The use of polished rice does not add either to the appearance of the bread nor to its nutritive value.

Soy beans and peanuts are extremely rich in protein and fat. Flour prepared from either of them, when mixed with white flour in the proportion of 1 to 3, is well adapted to make a nutritious bread. Bread made from white flour alone contains less than 9 per cent protein and only about 0.3 per cent of salt-free ash, while bread made from soy bean and wheat flour contains about 14 per cent protein and 1 per cent salt-free ash. Bread made from peanut and wheat flour mixture contains about 12 per cent protein and about 0.62 per cent salt-free ash. Thus it is seen that even when only 1 part of these substitutes is mixed with 3 parts of white flour the resultant bread is about 40 to 80 per cent richer in protein and about 50 to 300 per cent richer in mineral ingredients other than salt.

As each person, it is calculated, consumes about three-fourths of a barrel of flour a year, and as the population of the Southern States is approximately 30,000,000, it is obvious that the general use of these wheat-flour substitutes would result in a marked reduction in the total quantity of wheat flour consumed in the South. On the basis of a total flour consumption in the Southern States of over 22,000,000 barrels, it has been estimated that if the practice became universal the use of 25 per cent of flour substitutes grown in the South would save over 5,500,000 barrels of flour. As a matter of fact, however, the saving would be far greater than this, because a much larger proportion of flour substitutes can be used in the preparation of biscuits than in bread. In view of this fact the total saving might amount to 10,000,000 barrels of white flour. All this flour, it must be remembered, is imported into the South from other sections and the consumer must pay freight rates on it.

TRY GRANDMOTHER'S METHODS OF DRYING VEGETABLES.

Producing food is only half the job.

Food which isn't needed now must be saved for the future.

To waste food any time is indefensible; this year it is little short of criminal.

Most vegetables and fruits are largely water, and it is the water that makes them spoil easily.

Drive off the water by drying and save the real food.

It will keep perfectly in a paper box.

You can draw on your spigot or well bucket for the water when you need it, and make appetizing food.

Your grandmother dried vegetables and fruits before canning was known.

If you can't get cans or jars at reasonable prices, practice the methods Grandmother found good. Send for Farmers Bulletin 841, which tells how.

GIVE CANNING FAIR TRIAL.

Home Canners Should Not Lose Heart if First Efforts Seem Failures.

"Don't judge the success of canning by your first effort with whatever product you happen to find in market, when you begin operations," says a statement recently issued by the United States Department of Agriculture. "It is more than likely that if you are a beginner at canning you will start with strawberries, the first fruit available. If you do you should realize that strawberries are one of the most difficult of all products to can satisfactorily. It is next to impossible, in fact, to can this fruit, as distinguished from preserving it (in which case a much larger proportion of sugar is used), so that its color, size, and texture will be preserved.

"It is normal, if ordinary canning practices are followed, to have strawberries shrink, turn more or less brown, and float to the tops of the jars. The product is palatable, however, and will keep perfectly if the sterilization has been done properly.

"Don't feel, therefore, that your strawberry canning is a failure. Above all, don't become discouraged and fear that all your canning will be unsatisfactory. Practically every vegetable and fruit worth canning may be canned and kept in a condition fairly comparable in flavor and texture to the fresh product.

"Canned food will be needed next winter as it has never been needed before. Let your slogan be, therefore, 'Can all the food you can; dry the succulent foods which can not be kept well otherwise.'

"In canning, specialize on nutritious foods and concentrate to small bulk by cooking down all vegetables high in water content."

HOME CANNING METHOD.

Bulletin Gives Directions for Conserving Fruits and Vegetables.

Canning fruits and vegetables in the home by the one-period cold-pack method is a relatively simple process and can be done with ordinary kitchen equipment and with comparatively little labor. Much of the surplus of the home garden can be saved for winter use by this canning method, which is fully described in a bulletin issued by the United States Department of Agriculture, Farmers' Bulletin 839, Home Canning by the One-Period Cold-Pack Method. This bulletin is of special interest and value to all housewives, canning clubs, societies, or persons interested in conserving the food supply of the Nation. It may be had on application to the United States Department of Agriculture.

The bulletin contains very explicit directions for canning practically all of the common garden vegetables, including tomatoes, peppers, sweet peppers, pumpkin, squash, sweet corn, field corn, beans, peas, and root vegetables, also various combinations of vegetables. It also includes canning directions for soft fruits and berries, and hard fruits, as apples, pears, or quinces. Directions for the canning of camp rations, meats, and soups are given in detail.

Each step in the canning process by the one-period cold-pack method is carefully outlined from the preparation of the equipment and the raw materials to the storing of the canned products. A special time-table showing how long fruits, vegetables, soups, and meats should be scalded, blanched, or sterilized, is of particular value to the housewife. Various types of homemade and commercial canning outfits are described.

PASTURE FOR HOGS.

Grain Can Be Saved—Permanent Pasture Best in Summer and Cheaply Maintained.

Pork can be produced at a profit, even with the present high prices of grain, by using forage crops to a large extent. Permanent pastures also play an important part in a forage-crop succession.

Temporary pastures such as the cereals are best utilized in the early spring, and forage crops such as corn, soy beans, cowpeas, and velvet beans furnish fall grazing, but late in the spring and in the summer there is a season during which few temporary crops are available, with the exception of rape. At this time permanent pastures such as alfalfa, the clovers, blue grass, Bermuda, and a number of others, have their greatest use. They do not furnish grazing as early in the spring as do the cereals previously mentioned, but they grow better during late spring and summer and afford an abundance of forage at a season when few other pasture crops are ready to graze.

Permanent pastures require a minimum of attention and care. They make the cheapest pastures to maintain as it is not necessary to plow and replant each year. If not too heavily grazed they may be carried over from one season to the next and increase in value each year. They furnish almost a balanced ration, and only a little supplement need be fed to obtain a normal growth of the pigs.

One of the chief advantages of a permanent pasture is its long growing season. Growth continues from spring until fall, and the forage is palatable and nutritious at almost any time. Either a few hogs may be grazed during the whole season, or, after the pasture has made considerable growth, a large number may be pastured for a short time with practically equal results in the amount of pork produced per acre; showing that a permanent pasture is adapted to a variety of conditions in the forage-crop plan.

A permanent pasture then takes the place of a reserve forage crop, being called upon to furnish grazing at any time of the year when other pastures fail or are exhausted. The first thing to be done when one contemplates engaging in stock raising is to establish a permanent pasture. It fits into the forage-crop succession at any point where most needed, and is the cheapest pasture to maintain.

NORTH AND WEST.

(*Continued from page 1.*)

4. Through organization and cooperation with dealers and manufacturers, they have facilitated the full utilization of tractor power within the communities where such assistance was needed, and this phase of the work will be greatly increased following closely upon the wheat harvest in each section.

5. They have aided the farmers in securing the necessary labor through the organization of farm bureau labor exchanges and cooperation with State and national agencies.

Fighting Hog Cholera.

6. They are now organizing their counties in sections where needed for the better control of hog cholera and are putting on such demonstrations in sanitation and the single treatment as will insure a larger measure of control of this scourge to farmers.

7. They have stimulated increased acreage of bread grains and forage crops through the recommendation of shorter rotations and the plowing up of thin pastures and meadows and the use of such forage crops as give the maximum yields per acre.

8. They are stimulating, through boys' and girls' club work, home economics agents and groups of women, the conservation of food through canning, drying, preserving, the production of infertile eggs, and like matters.

9. At the present time the county agents are suggesting for the wheat regions of Kansas, Missouri, Nebraska, and southern Illinois early plowing for fall wheat, to control chinch bugs, secure a firm seed bed and insure readiness of seeding immediately following the Hessian fly free seed dates. Already in these States and in Indiana and Iowa and elsewhere the seed wheat situation is being ascertained and provided for, particularly in the western portions of Kansas and Nebraska. Plans are being made throughout the section for the treatment of all wheat seed for smut control.

SAVE VEGETABLE SEED.

(*Continued from page 3.*)

seed. When there is a quantity of stalks the seed may be beaten out with sticks, the stalks being laid on sheets so as to catch the seed.

Biennials.

To this class belong onions; root crops, such as carrots, beet, parsnip, and turnip; cabbage or other members of the cabbage family; and parsley. In the case of these varieties the plants must be grown one season and selected plants held over to the next season for the raising of seed. All of these sorts produce well, and for the small garden the seed from a half dozen roots or plants will yield enough seed. In the case of root crops, it is well to select the desired roots from late plantings, so that the roots may be stored when still in prime condition for holding through the winter.

Beets, carrots, and turnips.—These biennials should be stored in a moist cellar or in dry, well-drained soil, so that they will be kept cool and moist and not likely to become either dry, water-soaked, or frozen, or to start into growth. In all these cases the best roots, considering shape and color according to the variety and soundness, should be selected. The roots should then be set out as *early in spring as possible*, after hard freezes are past, and planted with the crowns 2 to 3 inches below the surface. The earlier these roots can start new growth the better the chances for a crop.

Parsnips may be left in the ground over winter, and in warmer sections, such as from Washington, D. C., southward, this may also be done with carrots; but these roots should be lifted in the spring and replanted as above mentioned. It may be necessary to support the seed stalks if a large growth is made.

When the earliest set seeds begin to shatter, the plants should be cut and placed in airy storage until the seed is all ripe, when it can be threshed out.

Since much the greater part of the root seed used in the United States is imported, it is especially urged that gardeners select roots this fall so as to produce some seed in 1918 for the 1919 planting.

Onion.—The bulbs selected for seeding should be pulled a little earlier than those intended for use or storage and should be cured without removing the tops by a full exposure to air, but protected from direct sunshine, rain, and dew. In the early fall they may be set for seeding, but it is essential to success that the soil be constantly moist but never wet. Even a single soaking from a heavy fall of rain often results in their decay. It is also important to protect them from repeated freezing. In sheltered locations this can often be best accomplished by a covering of earth, but this should be removed so as to prevent the growing tops from being too much blanched.

The seed turns black long before it is ripe, and the seed heads should not be cut until there is danger of serious loss from shattering and then should be further cured by full exposure to the air until the bulk of the seed drops out.

The yield of seed from spring-set bulbs is very uncertain, but fair crops are sometimes secured from bulbs which have wintered well in storage by setting them as early as possible in well-drained, warm soil.

Cabbage.—Plants to be used for seed production should be started late, so that they will only begin to head at the time of the first hard frosts or actual freezing. The plants should then be pulled and stored, either in a cellar, so that they will be constantly moist, or by burying them in the open, so that the heads will have some air but not be exposed to repeated freezing. As soon as danger of severe and long-continued frost is past the plants for seeding should be set so deep that the head will be partly covered. As they start into growth the head leaves should be carefully pulled apart to allow the seed stalk to develop freely. When the pods are ripe the stalks should be cut and cured in a dry place. Later the seed may be beaten out with sticks.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JULY 18, 1917. No. 50

SILAGE FROM STOVER.

Most Economical Way to Convert Corn Fodder into Meat and Produce Manure.

The most economical way of handling corn stover is to put it into the silo. If generally adopted, this practice would end a waste through wrong methods that now amounts to 35 per cent of all the stover fed, says the United States Department of Agriculture. It would place at the disposal of the farmer an enormous mass of roughage to cheapen the cost of producing meat and to maintain soil fertility in the most economical of all ways—by the production of manure.

That the value of stover as feed is recognized to some extent is indicated by the fact that 81.5 per cent of what is produced is fed in some way. Frequently, however, it is not the right way. For instance, such practices as "pulling the fodder," or "topping" the corn are most wasteful, but approximately 30 per cent of matured corn is handled in one of these two ways. The stalks that are left standing in the field are pastured, plowed under, or burned.

Never Burn Stover.

To burn stover is a crime against intelligent agriculture for which it is difficult to find any explanation except obstinate ignorance on the part of the perpetrator. It offers a quick and easy method of cleaning the ground for plowing, but that is a small offset for the waste of good material. Plowing under and pasturing are better, but they also involve some waste.

On the other hand, ensiling the stover means that its feeding value is utilized to the full. A quantity of roughage is provided which lessens the need for expensive concentrates and makes the production of meat more profitable by lowering the cost of manufacture. Obviously, this is a stimulus to the keeping of live stock, which from every point of view is most desirable.

Preparing Stover for Feeding.

In preparing stover for feeding, chopping or shredding increases its palatability and enables a greater quantity to be stored in a given space. Both of these methods, however, involve the use of additional labor and can only be recommended when labor and power are cheap and abundant. Cutting and shocking, on the other hand, involve some waste, but in general this is offset by the saving in labor.

No matter how it is prepared, corn stover, with a little grain or other concentrate, is an excellent roughage for wintering cattle, especially mature breeding cows. In some sections it is the sole roughage used for this purpose. In others oat straw is added.

KEEP COLD FRAMES IN USE.

These Devices Prolong the Period for Production of Early Spring Vegetables.

Gardeners too often waste the producing power of the rich, well-tilled soil of cold frames after early started crops have been removed and set in the garden, say specialists of the United States Department of Agriculture.

It should be recognized, the specialists point out, that most of the garden crops of early spring which ordinarily can not be grown to good advantage in the open after dry hot weather sets in, can be grown satisfactorily at such a time in cold frames. Among such vegetables are lettuce, radishes, and early beets. All these plants thrive best under cool, fairly moist conditions. The sides of the cold frames furnish a partial shade and a good protection from drying winds and so help to simulate conditions found in the spring in the open. If it is desired, slats spaced an inch or two apart, or light cheesecloth, may be placed over the cold frame to still further increase the shade.

Lettuce and radish seed may be planted together in the frames. The radishes will mature first and will be out of the way by the time the space is needed for lettuce. If planted thick, the surplus lettuce should be removed when the plants are a few inches high. If spaced an inch or so the surplus plants need not be removed until they are large enough to be eaten. The lettuce which are to be allowed to head should be left about 6 inches apart.

Beets may be planted between the rows of lettuce after the latter is well along, and permitted to grow after the lettuce has been harvested.

By planting these crops successively cold frames may be put to intensive use throughout the growing season.

Fifty rats on a farm will cost the owner $100 to $300 a year.

KEEP CHICKS GROWING.

Their Care During Warm Weather Is Important—Essentials to Proper Growth.

The care of growing chicks during the summer is one of the most important factors in poultry raising. The chicks may be hatched from strong, vigorous stock and carefully brooded; but unless they receive the proper attention during the warm months their growth may be retarded. In other words, they should be so managed that they will mature into well-developed fowls.

Proper Housing.

Growing chicks should be provided with a house that will give them a place to stay in bad weather and at night. No particular style of house is recommended, but it should be so built that it will provide the chicks with ample ventilation, dryness, sunlight, freedom from drafts, and be so arranged that it can be cleaned easily and frequently.

The lumber from piano and dry-goods boxes can be used in building such a house, and when covered with ordinary roofing paper so as to keep out the rain, will make desirable quarters. It is suggested that such houses be built on the colony plan, so that they can be moved from place to place, thus providing the chicks with fresh ground to range over. Elevating such a house 6 inches above the ground will assist in keeping the floor dry, by means of the circulation of air, and such space will also provide shade for the chicks.

In placing the chicks in their growing house for the first time, it is best to confine them for several days by erecting a temporary yard wherein they can run for 5 or 6 days, until they learn where to return when the fence is removed and they are allowed their liberty. Care should be taken not to crowd the chicks by placing too many in any one house. When the chickens cover the greater part of the floor at night, it is an indication that they are too crowded. At such a time they should be thinned out and placed in another house.

Feed, Water, and Shade.

Feed for growing chicks may be divided into three classes—grain feed, dry mash, and green feed.

In addition to the grain feed that the chicks are likely to find when on free range, a grain mixture should be given them morn-

ing and evening. The following rations should produce good results:

Equal parts of cracked corn and wheat; as the chicks increase in size, oats may be added. To cheapen this ration, it may be changed to two parts cracked corn and one part wheat. When one part of oats is added to this mixture, as the chicks increase in size, the ration may be changed to three parts cracked corn, one part wheat, and one part oats.

In addition to the above feed, a dry mash should be fed in a hopper to which the chicks have access at all times. The following mixtures are suggested:

2 pounds corn meal.
1 pound middlings.
4 pounds oatmeal.
2 pounds wheat bran.
2½ pounds beef scrap.

---

2 pounds corn meal.
1 pound middlings.
2 pounds wheat bran.
2½ pounds beef scrap.

---

3 pounds wheat bran.
3 pounds middlings.
3 pounds corn meal.
1 pound crushed oats.
1½ pounds beef scrap.

Charcoal, grit, and oyster shells should be provided so that the chicks can help themselves whenever they want to.

If a continued supply of sour milk can be obtained it may be fed separately in a pan provided for the purpose and the beef scrap in the above rations reduced one-half. Sour and sweet milk should not be fed alternately, as such practice is likely to cause bowel trouble. Whenever it is possible, growing chicks should be allowed free range, so they may obtain as much natural green feed as they need in addition to bugs and worms. When green feed can not be obtained on range, such feed as sprouted oats, cut clover, mangel-wurzel beets, etc., should be fed daily.

The importance of clean, fresh water for chicks can not be overemphasized. In very hot weather fresh water should be given to them twice a day. Whenever possible the pan of water should be placed in the shade to keep cool. The water pan should be cleaned every day before fresh water is added.

Plenty of shade should be provided for growing chicks. When allowed to range in an orchard or cornfield they will not only find ample shade and green feed but will benefit the trees or corn as well as themselves by destroying bugs and worms. Sometimes sunflowers are grown for shade. Artificial protection against the sun's rays may be obtained by supporting frames covered with burlap a few feet above the ground.

Cleanliness—Freedom from Lice.

Every effort should be made to keep the coops and houses clean and sanitary. Disease most frequently starts in unclean, poorly ventilated houses. The house should be cleaned at least once a week. Sand or litter of some kind should be scattered over the floor of the house, so as to assist in keeping it clean. When chicks are confined to a limited range, the ground should be spaded up at frequent intervals, so as to provide fresh ground for them to scratch in. Chicks should be examined frequently to see if they are infested with lice. When lice are found, every effort should be made to get rid of them by applying a small portion of a mixture of equal parts of vaseline and lard to the top of the head and around the vent.

General Management.

As soon as the cockerels are of broiler size those not intended to be kept as breeders the following year should be marketed. When the cockerels begin to annoy the pullets the sexes should be separated.

TO CAN SWEET CORN.

Method Used by Canning Demonstrators in the North and West.

Can as soon after the corn is gathered as possible. Remove husks and silk. Blanch by placing in boiling water for five minutes. Remove and dip quickly into and out of cold water. Cut the corn from the cob and pack directly into hot jars or cans to within one-fourth inch of the top. Pour in enough boiling water to fill the container. Add one level teaspoonful of salt to each quart. Put rubber rings and caps of jars into position, but do not tighten the wire clamps. Seal tin cans completely.

Place containers on a false bottom of wooden slats or wire mesh in a vessel of water deep enough to cover the containers completely. Keep the water boiling for three hours.

Remove the jars, tighten covers, invert jars to test seal, and cool (not in draft, as jars might crack).

Tin cans may be placed in cold water for rapid cooling.

After the containers are cool store in a dark, cool place.

Rapid preparation for canning is especially desirable for corn if a good quality of product is to be obtained. The best results can be secured when one person cuts the corn from the cob and another fills the containers. If it is necessary for one person to work alone she should cut off sufficient corn to fill one jar, pour on boiling water, add salt, place the rubbers and caps in position, and put the jar or container into hot water at once. The extra cooking which will be given to the cans first filled will not be injurious and a better product will be secured than if the cut corn were allowed to stand until all jars were filled.

MORE BEEF FROM SOUTH.

Southern Cattle-Feeding Demonstrations Helping to Increase Meat Production.

As a means of promoting meat production in the South, the cattle-feeding demonstrations carried on cooperatively by the Bureau of Animal Industry, United States Department of Agriculture, and the State agricultural colleges are proving an effective and practical agency.

These demonstrations are designed to give local farmers opportunity to see for themselves the results of improved feeding methods and to make use of the advice of beef-cattle specialists. As a result of demonstrations, many who otherwise would hesitate to invest money in a locally untried industry feel justified in buying cattle and using high-priced feeds.

For demonstration purposes the specialists try to induce the owner of a farm equipped with silos and scales to undertake the feeding of beef cattle. The specialists advise the farmer as to the kind of cattle to feed, the composition of rations, and the best methods of starting the cattle on feed and finishing and handling them. From time to time the specialist visits each demonstration farm to check up and direct the work. Weights and records are kept either by the specialist or by the county agent. Interested farmers are invited to inspect the cattle at various times, and the demonstration closes with a large gathering of farmers to show results and discuss the methods. At these meetings the men who have made mistakes, such as, perhaps, starting the cattle with too heavy a ration of concentrates which caused them to scour and go off feed, learn how to correct such mistakes and in most cases volunteer enthusiastically to feed another year with the object of making a better showing.

Cattle Feeding Demonstrations, 1916-17.

The accompanying table shows records of feeding demonstrations held in Georgia, Alabama, and Mississippi.

The data given in the table are taken directly from the records as kept and are not placed on a directly comparative basis. The cost per 100 pounds of gain and the profits made in the different demonstrations are influenced by the varying prices paid for feed used and the difference in margins. Each lot of steers shows a good profit for feeding without crediting them for the manure produced. The value of the manure is an important item in building up soil fertility, as a large proportion of the fertilizing elements contained in the original feeds are recovered in the manure. The feeder usually considers a profit is made when he gets the manure free of charge.

In Hart County, Ga., 39 grade Angus, Shorthorn, and Hereford steers of good quality were fed 91 days, getting on full feed a ration of 6.25 pounds of cottonseed meal, 33.25 pounds of corn silage, and 2.5 pounds of corn stover. In addition, they were pastured 16.5 days on velvet beans. This lot of steers fed on an excellent ration of home-grown feeds, made a high daily gain per head of 3.4 pounds, and returned the owner a profit of $27.21 per head.

Record of feeding demonstrations in Georgia, Alabama, and Mississippi.

	Steer feeding, Hart County, Ga.	Calf feeding, Sumter County, Ala.		Steer feeding, Hinds County, Miss.
		Lot 1.	Lot 2.	
Number of cattle	39	42	30	84
Days fed	91	150	120	126
Average initial weight, pounds	647	372	540	646
Average final weight, pounds	956	585	711	897
Average total gain, pounds	309	213	171	251
Average daily gain, pounds	3.4	1.42	1.42	1.99
Average daily ration (full feed):				
Cottonseed meal, pounds	6.25	2.75	3.12	3.76
Shelled corn, pounds	.....	2.00	1.00	.....
Cracked corn, pounds	.....	.....	.....	2.44
Corn silage, pounds	33.25	17.00	22.00	41.00
Corn stover, pounds	2.50	.....	.....	.....
Mixed hay, pounds	.....	2.00	5.00	4.05
Peavine hay, pounds	.....	1.50	2.00	.....
Cost of feed per hundredweight of gain	[1] $4.35	$7.87	$8.77	$8.48
Initial cost per hundredweight	$5.34	$5.60	$5.60	$4.50
Selling price per hundredweight	$7.86	$7.00	$7.25	$7.82
Average profit per head	$27.21	$3.36	$6.19	$7.70

[1] Velvet-bean pasture for 16½ days charged at $16.

In Sumter County, Ala., two lots of grade Angus and Shorthorn calves were fed. The calves of lot 1 were very thin from poor pasture. They were fed 150 days, getting on full feed a ration of 2.75 pounds of cottonseed meal, 2 pounds of shelled corn, 17 pounds of corn silage, 2 pounds of mixed hay, and 1.5 pounds of peavine hay. Gains were very slow at first and the average daily gain was only 1.42 pounds. Their ration would have been much improved by increasing the protein feed and saving the corn until toward the end of the feeding period. They returned a profit of $3.36 per head.

The calves of lot 2, fed 120 days, were heavier and in better condition. They were fed a ration of 3.12 pounds of cottonseed meal, 1 pound shelled corn, 22 pounds of silage, 5 pounds of mixed hay, and 2 pounds of pea-vine hay. The gains made were the same as for lot 1, but they were better finished and sold for 25 cents per hundredweight more and returned a profit of $6.19 per head.

In Hinds County, Miss., 84 head of grade Hereford and native steers were fed 126 days. The average daily ration for 126 days was 3.76 pounds of cottonseed meal, 4.4 pounds of cracked corn, 4 pounds of corn silage, and 4 pounds of mixed hay. This ration proved very satisfactory, the steers making an average daily gain of 2 pounds and returning a net profit of $7.70 per head.

As a direct result of these feeding demonstrations a number of local farmers are erecting silos and making preparations to feed several hundred head of cattle during the coming winter.

HOG CHOLERA CONTROLLED.

Bureau of Animal Industry Reports Successful Fight in Missouri.

Hog cholera is being held in check in Missouri by the energetic efforts of farmers, veterinarians, and representatives of the Bureau of Animal Industry cooperating with State authorities, according to a recent report of conditions in that State by an inspector of the Federal bureau. By the use of serum the disease now appears to be under control throughout the State, the report says, and the inspector adds: "We expect to keep it under control." Declaring that the cooperation of farmers and veterinarians has been very encouraging, the bureau representative summarizes his activities in May as follows:

Number of infected herds found	209
Number of sick hogs treated in infected herds	2,285
Number, apparently well, treated	6,352
Number died before treatment	833
Number too sick to treat	154
Number of veterinarians treating	63

"In nearly all cases," reports the inspector, "the well herds surrounding the infections were given the simultaneous treatment as a precautionary measure. During the month 68 practicing veterinarians were visited and 45 demonstrations made with the view of securing uniformity of methods. Thirteen lectures were given in infected areas with a total attendance of 579. The bureau employees traveled by rail 6,739 miles and by other conveyances 3,304.

"Outbreaks appear to be sporadic and we do not know of any spread from these infected areas to surrounding herds. The conditions in the open-range swamp country of southeast Missouri, mentioned in the last report, now appear to be under control. A majority of the herds in this district are being treated as a precaution and the latest reports show that only a few infections are being found. We are very much encouraged as to the outlook. On account of excessive rains and washouts on railways and roads the work has been somewhat handicapped the last two weeks."

KEEP PIGS GROWING.

Good Pasture, Feed, Exercise, and Sanitation Are Important Factors—Supply Mineral Matter.

Keep the spring pigs growing all through the summer. It is the pig's business during this time to develop a good frame, to grow bone, muscle, and vital organs, and to lay on fat. Plenty of pasture, some grain, exercise, and good sanitary quarters are all necessary if the spring pig is to be thrifty and profitable, say specialists of the United States Department of Agriculture.

Give the spring pigs plenty of good pasturage. They should be kept on pasture as long as possible and gain the benefit of its cheap nutrients, especially mineral and protein, and its tonic and digestive qualities. But pigs on pasturage alone, even alfalfa, need some grain supplement. The amount of grain or other concentrated feed used would depend on how much pasturage is available, on the cost factor of grain or other feeds, on the age and condition of the pigs, and the time at which the farmer expects to market them. To be ready for the early fall markets, spring pigs must be fed a heavier grain ration than pigs intended for the winter market.

Less protein supplement is needed when pigs are run on leguminous pastures. Under most farm conditions the pigs will gain well on a 1 to 2 per cent grain ration. The self-feeding method makes for cheap and rapid gains. If the grain ration is limited, the hand-feeding method is better. By feeding once a day in the early evening, pigs take greater advantage of the pasture and graze hungrily during the cool of the morning or afternoon. Plenty of fresh, clean drinking water always should be available.

Pigs on pasture usually get enough exercise. They should have a clean, dry, well-ventilated shelter to guard against exposure to storms, and to supply shade. A concrete wallow will add to the pigs' comfort, and a layer of oil on the water will keep down lice. Clean bedding also helps to keep away lice, as will an oiled sack on a rubbing post, or sprinkling the pigs with crude oil every two weeks.

To supply mineral matter and a tonic, the following mineral mixture is good. It always should be accessible. Dissolve the copperas in hot water and sprinkle over the mixture.

Copperas, 2 pounds; sulphur, 4 pounds; slaked lime, 4 pounds; salt, 8 pounds; wood ashes, 1 bushel; fine charcoal, 1 bushel.

Proprietors of large hotels report that control of rats saved them over $200 a month.

SWEET CLOVER SEED.

Harvesting at Right Time and Proper Use of Machinery Will Prevent Large Waste.

One-fifth to three-fourths of the total seed yield of sweet clover is lost from shattering. Cutting at the wrong time and improper handling of the crop at the time of harvest are largely responsible for this loss. How to determine the right time to cut the seed crop and how to harvest it with the least possible loss of seed by slight adjustments of harvesting machinery are discussed in a new publication of the United States Department of Agriculture, Farmers' Bulletin 836, Sweet Clover: Harvesting and Thrashing the Seed Crop.

Cut Second Crop for Seed.

White sweet clover and biennial yellow sweet clover may be harvested for seed the year following seeding. It is becoming a general practice in many sections of the country, says the writer of the bulletin, to utilize the first crop of the second season for pasture, ensilage, or hay and the second crop for seed. The shorter growth of the second crop is a very desirable feature, as it may be cut with an ordinary grain binder without difficulty. It is possible to equip the grain binder with pans and extensions to the rear elevator plate and binder deck so that at least 95 per cent of the seed which shatters when the crop is cut may be caught as it falls and saved. The bulletin explains in detail, with drawings, how to make at small cost this seed-saving attachment. Other machines which may be used to harvest sweet clover are the self-rake reaper, the grain header, and the corn harvester.

Time of Cutting for Seed.

The time of cutting the seed crop should be governed largely by the machinery which is to be used. If the plants are to be harvested by a self-rake reaper or a grain binder they should be cut when approximately three-fourths of the seed pods have turned dark brown to black. At this time some flowers and many immature pods will be found on the plants, but the field will have a brownish cast. Where a grain header is employed the plants may become somewhat more mature before cutting. More seed is shattered when the plants are cut at this stage than when cut earlier, but this is not necessarily a loss as the grain header is used, for the most part, in semiarid sections where shattered seed is depended upon to reseed the land.

Much seed may be lost if harvesting is delayed for only a few days. Many fields have been observed, according to the department specialist, in which 90 per cent of the seed had shattered in less than two weeks after the time the plants should have been cut. Cutting the plants when they are damp from rain or dew also will reduce loss by shattering.

Threshing the Seed.

When it is possible to thresh in a week or 10 days after cutting, the crop should be threshed directly from the field, as little seed ordinarily will be lost during this time and the work of stacking will be avoided. The seed may be threshed either by flailing or by the use of a grain separator or a clover huller. The yield of sweet clover seed varies from 2 to 10 bushels of recleaned seed to the acre. Sweet-clover straw may be utilized for soil improvement or as a roughage for stock.

VIOLATIONS OF LAWS.

Fines and penalties were imposed in prosecutions for violations of regulatory laws, as reported to the Bureau of Animal Industry during the month of May, 1917, as follows:

Meat-Inspection Law.

Peter B. Nevius and Earl T. Connet, Flemington, N. J., $5 each.

Jacob Haring, Curley Hill, Pa., $10.

William L. Stevens, Wrightstown, N. J., $10.

Cudahy Packing Co., Boston, Mass., $15.

Twenty-Eight-Hour Law.

Union Pacific Railroad Co. (4 cases), $400 and costs.

Pennsylvania Railroad Co. (14 cases), $1,550 and $114.65 costs.

Pittsburgh, Cincinnati, Chicago & St. Louis Railroad Co. (3 cases), $400 and $38.25 costs.

Baltimore & Ohio Railroad Co. (2 cases), $500 and $25.70 costs.

Lehigh Valley Railroad Co. (3 cases), $300 and costs.

Mobile & Ohio Railroad Co., $100 and costs.

Chicago, Milwaukee & St. Paul Railway Co. (9 cases), $900 and costs.

New York Central & Hudson River Railroad Co. (2 cases), $200 and $20.15 costs.

Canton Railroad Co., $175 and $19.55 costs.

American Express Co., $100 and $24.90 costs.

Quarantine Laws.

Atchison, Topeka & Santa Fe Railroad Co., interstate shipment in violation of Texas fever regulations, $100 and costs.

St. Louis & San Francisco Railroad Co. (4 cases), interstate shipment in violation of Texas fever regulations, $400 and costs.

Missouri, Kansas & Texas Railway Co., interstate shipment in violation of Texas fever regulations, $9.85 costs.

Atchison, Topeka & Santa Fe Railroad Co., interstate shipment in violation of cattle-scabies regulations, $100 and $16.66 costs.

PRODUCE CHEAPER EGGS.

Superiority of Leghorns as Layers Over General-Purpose Breeds Shown by Recent Feeding Test.

Leghorns produce eggs cheaper than hens of the general-purpose breed—Plymouth Rocks, Wyandottes, Rhode Island Reds, and Orpingtons. This fact, which confirms the belief and experience of commercial poultry farmers, was one of the results obtained in a rather extensive feeding test recently reported by poultrymen of the United States Department of Agriculture. Because they lay as many or more eggs, eat only about 55 pounds of feed per head, as compared with 70 to 85 pounds eaten by the general-purpose breeds, and because their egg yield very materially exceeds that of general-purpose breeds during their second and third laying years, Leghorns, the specialists say, undoubtedly are more profitable to keep for the production of eggs only.

Feed Cost Per Dozen Eggs.

In this test the feed cost of a dozen eggs for one of the Leghorn pens was 7.34 cents in 1913, while the average cost of all the pens of the general-purpose breeds was 10.6 cents. In 1914 the feed cost of a dozen eggs for the same pen of Leghorns was 8.7 cents as against an average cost of 15.1 cents for the second laying year of the general-purpose pens. During their third laying year the cost of a dozen eggs was 8.8 cents compared to 18.6 cents for the general-purpose fowls. The total value of eggs per hen over feed cost in the Leghorn pen for three years was $6.84 against $4.30 for the general-purpose hens. The highest egg production obtained in any of the feeding experiments up to 1915 was by a pen of Leghorns which laid 157.6 eggs per hen, at a feed cost of 6.7 cents a dozen.

Average Weight of Eggs.

The Leghorns produce smaller eggs than the general-purpose breeds. The average weight of the eggs of a pen of Leghorns during the first laying year was 1.42 pounds per dozen as against 1.53 to 1.58 pounds for the other pens. However, Leghorns laying eggs weighing 1.50 pounds per dozen or even more, the specialists say, have been selected and bred by many poultrymen. An examination in May, 1915, of 500 eggs from three Leghorn pens showed that 31 per cent weighed more than 2 ounces each, or 1.50 pounds to the dozen.

The value per dozen of the eggs produced by the Leghorns was from 1 to 3 cents less each year than the eggs of general-purpose hens. This difference is due to the fact that the general-purpose breeds are better winter layers than the Leghorns, while the latter give a higher production in the spring and

summer. Very few Leghorns become broody which probably materially affects their egg yield as compared with the general-purpose breeds. Better fertility in the eggs, especially with stock confined to the yards, is more often secured with Leghorns than with the general-purpose or any of the heavier breeds.

BABY BEETS FOR WINTER.

Can Them if You Have Cans—Dry Them if You Have No Cans.

Now is a good time for garden owners in many sections who have more beets of the early crop than they can eat in the fresh form and an abundance of glass jars and tin cans, to can baby beets, says the United States Department of Agriculture.

How to Can Baby Beets.

Grade for size, color, and degree of ripeness. Wash thoroughly, use vegetable brush. Scald or blanch in hot water sufficiently to loosen the skin. Dip quickly into cold water. Scrape or pare to remove skin. Pack whole vegetables, slices, or cross-section pieces in hot glass jars or tin cans. Add boiling hot water until full. Add level teaspoonful salt to quart. Place rubbers and tops of jars in position; partially seal, but not tight. Cap and tip tin cans completely. Place on false bottom in a vessel of hot water which just covers the containers. Sterilize at boiling temperature in hot-water-bath canners for 90 minutes.

Drying Beets.

If the early crop of beets is abundant but jars or cans are not available, the surplus young beets may be dried for winter use.

Select young, quickly grown, tender beets. Wash, peel raw, slice about ⅛ inch thick, and dry over a stove, before an electric fan, or in the sun. The dried product may be packed in paper cartons, in paraffined paper bags, baking-powder or coffee cans, or other containers which will exclude moisture and insects.

THRIFT THOUGHT.

Do you throw away "ham gravy" or bacon fat, Madam Housewife, because it is too greasy for ordinary use?

Here is a way suggested by the United States Department of Agriculture to make it blend into soups or gravies instead of floating as a greasy layer on top:

Stir into each two tablespoons of melted grease one-half tablespoon of flour. The mixture will blend easily into milk soups, stock soups, sauces, or gravies and give an appetizing flavor.

STOP MANURE WASTE.

Assistant Secretary Urges Farmers to End Tremendous Loss of Fertilizing Materials.

Farmers are urged in a statement recently issued by Assistant Secretary Carl Vrooman to make every effort to save the vast amount of valuable manure now allowed to go to waste in this country. Assistant Secretary Vrooman estimates that one-half the manure produced in the United States is not used as a fertilizer, there being an annual loss of material worth $1,200,000,000—once and a half the value of the country's 1916 wheat crop.

"This is not a wild guess," he continues, "but a very shrewd and conservative estimate based on reliable statistics. It has been found that each horse or mule produces annually $27 worth of manure (as compared with commercial fertilizers), each head of cattle $20 worth, each hog $8 worth. Calculating from the 1910 census figures for number of animals on farms—62,000,000 cattle, 24,000,000 horses and mules, 58,000,000 swine, and 54,500,000 sheep and goats—the total value of manure produced is found to be about $2,461,000,000. Recent investigations by the United States Department of Agriculture indicate that at least half of this great wealth of fertilizing material is wasted. In some good general farming sections not more than 15 per cent of the manure produced is used. Even in the most intensive dairy regions, where cows are largely stall-fed and comparatively great care taken with the manure, the loss seems to be approximately 25 per cent.

"Here, then, is a job for the American farmer, worthy of his utmost effort and in keeping with the spirit of this great hour in American history. To save a billion dollars' worth of manure is a herculean task—a veritable latter-day Augean-stable job, for it means the handling of literally millions of tons of dung and litter. It means the construction of concrete manure pits, of paved feeding pens or sheds, and greatly increased care in the conservation and use of bedding materials. It means a lot of work, but it is work that can be done at odd hours and moments, and work that will pay tremendous dividends, not only as a war measure, but conceivably for all time, for if we once get the habit of making full use of our available manure supply we are not likely to lapse into the old, wasteful ways again.

"The cheapest and best way to handle manure, where convenient, is to haul it to the field and spread it daily, or at least every two or three days. In this way, if plenty of bedding be used, practically all the valuable constituents of the manure are saved, since leaching after the manure is on arable land merely serves to put the fertilizing materials where they ought to be. In this way, too, loss through heating, or 'fire-fanging,' is avoided.

"Many farmers, however, are not so situated as to make it profitable for them to handle manure in this way. For such farmers the concrete manure pit offers an ideal way of saving manure. Such a pit need not entail great expense. A pit 3 feet deep, 12 feet long and 6 feet wide, with walls and floors 5 inches thick, will serve the needs of the average farm. In ground that does not cave in, only an inside form will be needed for such a pit, except where the concrete extends a few inches above the ground to prevent flooding by surface water. The floor should be reinforced with woven-wire fencing, put in after about 2 inches of cement has been laid, the sections of fencing being cut long enough to bend up a few inches at either end into the side walls. When the reinforcing has been put in the remaining 3 inches of the floor is laid, and the forms for the side walls set up and used immediately. Use one part cement, two of sand, and four of screened gravel. A pit of this kind is large enough to hold the accumulation of manure on the average farm until such a time as it can be hauled conveniently to the field and spread.

"Another good way to save manure, especially in the case of hogs or of beef cattle, is to have a concrete paved feed lot, preferably under a shed roof. Where the farmer can not afford a paved floor, a cheap open feeding shed may be made to serve the purpose very well if abundant bedding is used to absorb the valuable liquid manure. In such a feeding lot or shed the manure is allowed to gather under the feet of the animals, each day's bedding being strewn over the well-tramped accumulation below. Some farmers using this system arrange their feed racks so that they can be raised from time to time, making it possible to feed till several feet of solidly packed manure has accumulated under the shed. It has been shown that manure suffers little from heating and leaching when handled in this way.

"The feeding shed serves the purpose of giving the general farm, or the beef-cattle farm, something of the advantage in the matter of manure saving held by the intensive dairy farm. It has been shown by farm-management surveys that the manure saved on the American farm under present conditions is almost exactly proportional to the number of animals stall fed on the farm and that the manure of animals not stabled has very little effect on yields, except in cases where field crops are 'hogged off' or otherwise pastured down, or where pasture is used in a rotation.

"This great war has brought home to us Americans, as it has never been emphasized before, the fact that we are the world's cham-

pion wasters. Without making any comparisons, and subject to correction if it can be shown that the facts are otherwise, I dare aver that our billion-dollar manure waste is the world's greatest single economic leak—the prize waste of the champion wastrels. With commercial fertilizers scarce, and some of them almost unobtainable, it would seem well worth our while, in this juncture, even without any reference to war conditions, to do everything within our power to stem this tide of loss, especially in consideration of the fact that stable manure is the best form of fertilizer known, and when we consider further the possible effect of a billion dollars' worth of manure upon world production at this time when the solemn duty of saving the world from famine devolves directly upon us—well, the vital need for manure pits and feeding lots in this broad land of ours becomes pretty clearly apparent."

KEEP HUMAN FOOD OUT OF GARBAGE

The fact that all the garbage is fed to chickens or pigs does not necessarily mean that no human food is being wasted in that household. It is true economy to feed to chickens and pigs material that can not be eaten by human beings, because such material is returned in part by the animal as human food. It is not true economy, however, to feed to animals stale bread or other material which could be made into eft-over dishes and used directly as human food. It must be remembered that the hog returns only one-third of such food as human food and that when bread is fed to chickens nine-tenths of the food is completely lost to the table. Those who really wish to avoid waste of food will not let anything useful for feeding human beings get into their garbage, but at the same time will see that all parings of vegetables, bones, inedible meat trimmings, and such material does go to feed animals. To make such material most useful for feeding animals, every housewife must take pains to see that no glass, metal, burnt matches, string, paper, or other material dangerous to animals gets mixed with kitchen garbage.

Rats destroyed over $30 worth of goods in a large department store each night. Trapping and other control measures here stopped losses that would have amounted to $10,000 a year.

Organize your community to get rid of rats—wasteful, costly, and dangerous pests. The United States Department of Agriculture will tell you how to deal effectively with rats in your home or store, on the farm, or under town conditions.

THE CORN RESERVE.

To Encourage "Eat More Corn" on Farms, Home Grinding Is Urged Where Mills Are Distant.

Hasty Pudding.

"The' hain't no hulsomer ner cleaner-tasted victuals, ner cheaper ner easier got."—Aunt Jerusha in Rowland Robinson's Danvis Folks.

In war time countries fall back upon their reserves. Corn is the food reserve of Americans—a tried and true line. Did it not enable the early colonists to win their wars with the Indians, the people who taught them not only how to grow this food but how to eat it? And did not George Washington's armies fight our first war for democracy eating "hasty puddin'," no-cake, samp, and all the rest of those famous cornmeal dishes? Why not give this veteran American food a chance in the great war for democracy?

It is time to call the corn reserve to the colors. That duty devolves upon American housewives. But the United States Department of Agriculture will help. The department, through its Office of Corn Investigations, has taken steps calculated to restore meal making on farms so situated that satisfactory qualities of corn meal at reasonable prices can not be had. Where commercial mills are distant it is believed that home grinders, owned cooperatively if not individually, would furnish a fresh and wholesome food product and save transportation costs. Accordingly, the department's corn office has issued these instructions to its field men:

No-Cake a la Aunt Jerusha.

"You never hearn o' no-cake? Wal, that was parched corn paounded up in a mortar an' eat wi' milk ef they hed it, an' ef they hedn't, jest mixed up wi' water. They l'arnt that of the Injins, an' they 'lowed it 'ould stan' by a man longer'n any other Injun corn fixin's. Then they uster make samp in the Plumpin' mill, big mortars they was, 'at went wi' a spring pole, an' they'd change off ontu samp when they got sick o' no-cake. Hasty puddin' an' johnnycake they couldn't hev, 'thout gittin' the corn graound tu a reg'lar mill, an' them was mebby forty miles off."—From Rowland Robinson's Danvis Folks.

"You shouldconsider the various ways in which farmers and communities remotely situated as regards grinding mills and fresh supplies of good corn meal, can prepare and utilize corn for food. We should be able to give practicable directions that would diminish transportation and the repurchasing of corn in the form of meal and other corn products at prices many times that of the corn from which they are made. Economic conditions will cause considerable substitution of corn for wheat as food, making this the opportune time to demonstrate that by prompt and proper preparation of new corn, the substitution causes no sacrifice, not even of palatableness.

"Do all that you can toward accumulating information of value which will assist such farmers to use their own corn for food. Find out the best mills, graters, and other needed machinery of different sizes that farmers can use at home in making food products from corn. Get all possible information regarding best sources and prices of both hand mills and mills that can be operated by windmills, automobile motors, gasoline engines, and such other power as is locally available."

And This Was Johnny-Cake.

"You never eat a johnny-cake baked on a board? You don't say! Wal, then, you do' know what johnny-cake is, Huldy. Haow did they make 'em? Wal, jest stirred up the meal wi' b'ilin' water an' salt, not tew thick ner tew thin, an' then spread it ontu a oak board 'at was made a-puppus, an' sot it up afore the fire, tilted a leetle mite at fust ag'in' a flat iron, an' kep' a-settin' it up stretter an' stretter till that side was done, an' then turn it over an' bake t' other side, an' all the time keep a-bastin' on't wi' sweet cream, an' then eat it an' be thankful 'at the Lord made Injin corn tu grow an' give his creeturs the knowledge tu use it proper."—From Rowland Robinson's Danvis Folks.

Primarily this move, with its echo of hasty pudding as eulogized above by Aunt Jerusha, and of early Colonial methods, is a mobilization of effort to make most effective and practicable on the farms of the country a conservation of wheat products by means of corn substitutions.

Maybe you don't entirely agree with Aunt Jerusha on some of her "receipts." Maybe you have learned better ones from the food scientists—modern amendments to Aunt Jerusha's original motion. But food experts are quite in agreement with this early champion that corn meal is one of the most wholesome foods and that there is no important dietetic difference between corn and wheat as sources of body fuel. And we've all agreed that there is a patriotic obligation to conserve food. So the duty becomes plain, though, as the specialists have pointed out, there need be no sacrifice of palatability if corn meal is properly made and served.

A new edition of Farmers' Bulletin 565, Corn Meal as a Food and Ways of Using It, brings Aunt Jerusha's recipes up to date. This bulletin, which should be in the hands of every housewife, will be sent to all who apply for it.

Rats destroy laces, silks, carpets, leather goods, etc.

CAN PEAS AND BEANS.

Easy to Save Surplus Crop for Use Next Winter—Expensive Equipment Not Necessary.

Housekeepers can easily can surplus green peas and snap beans, which are beginning to appear in home gardens in many sections. The season has been unusually good for peas, and home gardeners in many localities are reporting unexpectedly heavy yields. Either of these products readily can be canned with no other home equipment than jars or cans and a wash boiler fitted with a false bottom of slats to keep the jars from resting on the bottom.

Canning Directions.

Here are directions given by the United States Department of Agriculture to the members of girls' canning clubs in the Northern and Western States:

Do not try to can peas or beans that have been long off the vines—the fresher the vegetables the better the product.

Shell peas; in case of beans, string and cut them as if for cooking.

Put the prepared vegetables in a cheesecloth bag or colander and blanch in live steam from boiling water for from 5 to 10 minutes.

Next dip the blanched product quickly in cold water and remove it almost immediately.

Pack the product immediately into hot scalded glass jars or tin cans.

Fill the containers completely with boiling hot water to which has been added 1 level teaspoonful of salt per quart. Place rubber rings on jars and screw tops almost, but not completely, tight. The water in the boiler will not enter these partially closed jars. Seal tin cans completely.

Put the jars or cans in boiling water in the wash boiler so that the tops are partly or wholly covered. Sterilize for 180 minutes in the boiling water, counting from the time the water begins to boil again. If other canning outfits are used, sterilize as follows:

	Minutes.
Water seal, 214 degrees	180
5 pounds steam pressure	60
10 to 15 pounds steam pressure	40

Wax and string beans as well as young, tender peas may be sterilized in 120 minutes.

Remove jars from boiler or sterilizer, tighten covers, invert to cool and test the joints for leakage. Examine cans for leaks. Even the slightest leak if not closed completely at once, means that the product in all probability will not keep.

General Suggestions.

Do not place glass jars to cool in a draft, which is liable to cause them to crack. Wrap jars in paper to prevent blanching, and store in a cool place.

If peas are roughly handled in blanching or cold dipping, or split or broken peas are not removed before packing, the liquid in the jars may have a slightly clouded appearance. If sterilizing has been properly done, cloudiness is no evidence that the product has spoiled.

For further information on canning these and other vegetables or for advice in overcoming difficulties, write to your State Agricultural College, or to the United States Department of Agriculture.

CAN NOW FOR NEXT WINTER.

Last year a Kansas canning team, consisting of a mother and her daughter, put up 827 quarts of food products. Of these 827 quarts, 337 were fruit, 285 vegetables, 4 soup, 31 meat, and 173 jelly. The total value of the output was $274.20, the cost of production $138.33, making a saving in that family's food bills of $135.87. This is just a sample of what was done in that one town by the mother-daughter club, consisting of 29 mothers, with their daughters.

The club was so successful that this year it has a membership of 200, all of whom are now busy caring for surplus fruits and vegetables in their little community. And this is how they are doing it: They are using the method advocated by the experts of the United States Department of Agriculture. You can do it too, if you like. Just ask the Division of Publications, Department of Agriculture, Washington, D. C., to send you the Farmers' Bulletin on home canning. This will show you how to can every kind of fruit and vegetable; also meat, soup, and mushrooms, and how to make ordinary preserves and sun preserves.

HOW TO CAN TOMATOES.

The following method is used by canning demonstrators in the North and West:

Select firm, well-formed tomatoes. Scald 1½ minutes, or until skins loosen. Dip quickly into and out of cold water. Peel and remove stems and cores. Pack directly into cans or hot jars. Press down with a tablespoon (add no water). Add a level teaspoonful of salt per quart. Put the rubber rings and caps of jars into position, but do not tighten fully. Seal tin cans completely. Place the packed containers on a false bottom in a vessel of water sufficiently deep to cover them by 1 inch and allow to remain at a boiling temperature for 22 minutes, when using hot-water-bath canners.

Rats breed from six to ten times a year and produce from 6 to 17 young in a litter.

MEAT SUBSTITUTE.

Experiments Show Cheese Is Easily Digested and Furnishes More Protein Than Meats.

American Cheddar cheese is a most satisfactory substitute for meat and may be made the important protein dish of a meal, say food specialists of the United States Department of Agriculture. Too many people use cheese only as an appetizer. Since it compares very favorably with meat in protein content and can be kept and served easily, its wider use is advocated.

Contrary to the opinion of many, Cheddar or "store" cheese is not usually indigestible and constipating. Extensive digestion experiments conducted by the department have demonstrated that more than 95 per cent of the protein in cheese is digested and that 90 per cent of its energy is available. Even when eaten in large quantities and for long periods, no case of indigestion, constipation, or other disturbance was observed in those who ate it. One person who ate cheese as the chief source of protein and energy, eating an average of 9.27 ounces daily for more than two years, did a fair amount of muscular work and kept in good health.

Protein and Energy Value of Cheese.

The value of cheese in comparison with some of the common meats is shown in the following tables:

One pound of American Cheddar cheese contains as much protein as: 1.57 pounds of sirloin steak; 1.35 pounds of round steak; 1.89 pounds of fowl; 1.79 pounds of smoked ham; 1.81 pounds of fresh ham.

To supply energy, also, cheese is one of the best food products. On the basis of energy supplied, one pound of cheese equals: 1.98 pounds of sirloin steak; 2.61 pounds of round steak; 2.52 pounds of fowl; 1.17 pounds of smoked ham; 1.29 pounds of fresh ham.

Thus it is seen that a pound of cheese supplies more than twice as much energy as a pound of fowl or round steak and almost twice as much protein as the same amount of fowl or ham.

Ways of Using Cheese.

Cheese may be used in many palatable dishes. When grated it may be used in soups or with many vegetables. Other foods with which cheese is used are: Macaroni and cheese, Welsh rabbit, tomato rabbit, baked rice and cheese, baked crackers and cheese, vegetable and cheese rolls, cheese omelet, oatmeal and cheese, and cheese mush.

Recipes and further information are given in Farmers' Bulletin 487, Cheese and Its Economical Uses in the Diet, which may be obtained free on application to the Department of Agriculture, Washington, D. C.

BERMUDA GRASS.

Farmers Should Use This Valuable Perennial for Pasture—Not Difficult to Eradicate.

Hay and forage are as essential to the maintenance of an adequate feed supply in this crisis as the production of the staple food crops themselves. In the Southeastern States Bermuda grass is the most valuable perennial grass we have. It makes excellent pasture and as hay its feeding value is the equal of timothy, although its market price is usually less.

Despite its obvious advantages, in the past many farmers have hesitated to plant Bermuda grass for fear that they would not be able to get rid of it when they wished to use the land for other purposes. In a new publication of the United States Department of Agriculture, however, Farmers' Bulletin 814, it is pointed out that eradication need not be a troublesome matter. Bermuda grass will survive many unfavorable conditions, but it will not live when shaded. An inexpensive method of eradication, therefore, is to plow a field of it in September and plant with oats, rye, barley, or some other winter crop. When this crop is harvested, the field should be disked or plowed at once and planted with cowpeas or velvet beans. When this second crop is removed there will be little grass left. In this way two profitable crops are obtained in the year and the ground left in good condition for corn or cotton.

Where the winters are sufficiently severe, the so-called roots may be frozen after being exposed to the air by very shallow plowing, leaving the furrows on edge as much as possible.

The grass is propagated by seeds, roots, or cuttings. Domestic seed from the West is superior to the imported and can usually be obtained at a reasonable price. Roots and cuttings, however, are used more commonly. Detailed instructions for planting these are given in the bulletin already mentioned. The cost, it is said, need not be more than $5 an acre for the labor, and the grass will cover the ground in a few weeks. Thereafter the meadow or pasture need not be disturbed as long as it gives a satisfactory yield. In the case of meadows, however, since they are intended to be permanent, it pays to level off all bumps and fill up hollows. As much preparation is required to make a good meadow as to make a good crop of corn.

Bermuda grass does not mix well with other grasses, but there are certain legumes which add greatly to its pasture value. Among the best of these are lespedeza, bur clover, black medic, and Melilotus. Each of these has its advantages, but a safe rule is to plant lespedeza and at least one of the others in every Bermuda-grass pasture. Melilotus is particularly useful in improving the condition and productivity of thin, barren soils which are at the same time rich in lime.

Bermuda grass itself will grow well on almost any soil that is fertile and not too wet. It does better, however, on soils that are heavy. It can withstand alkali, but needs humus and nitrogen. Warm weather during the growing season is also necessary, and the winter must not be too cold. Southeastern Virginia is approximately the northern limit of its profitable growth on the Atlantic coast.

Probably the most profitable use for Bermuda grass is as pasture. As has been said, the feeding value of the hay is approximately that of timothy, but in many localities the grass does not grow high enough to pay for the cutting. When put on the market, the price depends to some extent upon the bright color and the attractiveness of the bale.

In pasture, it is estimated that one steer to the acre during the growing season is a fair average, but 2 acres per steer may be required. On the other hand, in specially favorable localities, 1 acre may carry three or four steers 9 or 10 months.

"GOOD TACTICKS."

Cattle ticks and powder don't mix.

Would you rather feed a tick or feed a soldier? The dipping vat gives you a real choice.

Every herd marched to the dipping vat helps our soldiers march to the front.

Every tick is sucking at the Nation's commissary.

Don't let ticks entrench themselves in the hides of your cattle.

That dipping vat will help keep our navy afloat and our armies afield.

Give the ticks a ticket to the dipping vat.

The more ticks, the fewer pounds of meat, quarts of milk, pats of butter.

If you really believe in efficiency, take ticks off and put leeches on—do the same work but faster.

The days of cupping for blood are over—dip that tick.

A dipping vat may not be able to float a battleship, but it can help feed the Navy.

How much of your feed is going to fatten blood-sucking ticks?

Every dipping vat is a solid foundation for the Nation's food storehouse.

Potatoes (both Irish and sweet), when cooked, furnish about as much body fuel as an equal weight of cooked cereals; they contain less protein and fat but more mineral substances.

PRODUCE MORE PORK.

Principal Meat of Army, City, and Farm—Hog Raising Is Profitable and Patriotic.

The quickest and surest way of augmenting the meat supply next to the raising of poultry is by raising hogs, the United States Department of Agriculture points out. The hog is the most important animal to raise for meat and money. He requires less labor, less equipment, less capital, makes greater gains per hundred pounds of concentrates and reproduces himself faster and in greater numbers than any other domestic animal. As a consumer of by-products the hog has no rival. No other animal equals the lard hog in its fat-storing tendency. The most satisfactory meat for shipping long distances on train, boat, or wagon, and for long storage after reaching its destination is mess pork. There is no animal which produces more meat and meat products than the hog.

Pork finds ready sale because packers have discovered many ways of placing pork on the market in attractive and highly palatable form combined with most excellent keeping qualities. There is no other meat from which so many products are manufactured. Very near 50 per cent of the total value, in dollars and cents, of the meat and meat products slaughtered in the packing houses of the United States is derived from the hog. Our country leads by far all countries in the production as well as in the consumption of meat and meat products. Three-fourths of the world's international trade in pork and pork products originates in the United States in normal times, and the war greatly has increased this proportion. According to the estimates there was an increase of 9,580,000 hogs between 1910, the census year, and 1916, inclusive. The increase at the end of 1915 was 3,148,000 over the preceding year, while it is estimated that there was a decrease at the end of 1916 of 313,000 hogs compared with 1915.

If we expect to continue to provide meat to foreign peoples as well as our own people, every farmer must put forth the best effort to produce more hogs. Hogs can be kept profitably upon many farms where they are not found to-day. Farmers who already raise hogs can produce many more, for there is not much chance of producing meat this year in excess of the requirements.

More dairy farmers should raise hogs for they fit in especially well upon dairy farms where skim milk, buttermilk, or whey is fed upon the farm. A man who has skim milk is in a better position to raise pigs than a man who has none.

Rubber rings! You'll need good ones while the preserving jars are still hot.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., JULY 25, 1917. No. 51

PREPARE NOW TO STORE FOOD CROPS FOR WINTER USE.

Home and Farm Methods Recommended for Keeping Potatoes and other Semiperishable Vegetables for Later Consumption.

IRISH-POTATO STORAGE.

Use of Pits, Dugouts, and Masonry Storage Houses for Holding the Main Crop.

The storage of potatoes of the main crop can be accomplished most satisfactorily throughout much of the United States in the dugout pit or potato cellar in some of its various forms of construction, says Farmers' Bulletin 847 of the United States Department of Agriculture, Potato Storage and Storage Houses. In general, the bulletin says, no attempt is made to store potatoes of the early crop since usually they are sold for immediate consumption.

While the dugout storage house is in most general use, concrete or masonry houses with frame superstructures are, perhaps, most satisfactory in cold climates. In some sections, especially in the South where drainage is poor, insulated frame structures built entirely above ground must be depended upon.

Purposes of Storage.

The primary purposes of storage, it is pointed out, are to protect the tubers from extremes of heat and cold and from light. Account also must be taken of conditions of humidity and ventilation and of the size of the storage pile.

The temperature should be the highest at which potatoes can be maintained firm and ungerminated, and which will at the same time hold fungous diseases in check. Experiments of the department with artificially refrigerated storage indicate that 36° F. is sufficiently low for all practical purposes and that in the earlier portion of the storage season a temperature of 40° F. is just as satisfactory as a lower one except where powdery dry rot infection occurs.

All natural light should be excluded from potato storage houses, because when the tubers are exposed to even modified light they are soon injured for food purposes. A

(*Continued on page 6.*)

105410°—17

HOME STORAGE.

Prepare Now to Store Next Winter's Food Supply—Guard Against Decay, Insects, and Rodents.

In order that householders may utilize spare time during the summer to put their cellars in shape for the winter storage of the surplus vegetables which will be grown on the home gardens that have been planted this year, or that they may make plans for other methods of natural storage, the United States Department of Agriculture has prepared the following discussion on the storing of vegetables:

Home Storage of Vegetables.

To those persons fortunate enough to possess land for the growing of vegetables sufficient in quantity for the needs of the family, storage is an economic necessity. Likewise it is an economic necessity to grow vegetables to store. A half-acre garden should produce far more vegetables than the average family can consume during the maturing period of the crops. Only a small portion of the garden should be planted to those vegetables which must be used as soon as they reach maturity. The remainder should be devoted to crops that are to be canned, dried, or stored. It is comparatively easy to keep by storing such vegetables as potatoes, beets, carrots, parsnips, salsify, turnips, cabbage, celery, onions, sweet potatoes, dry beans, and dry Lima beans. Some of the crops may be stored in the cellar under the dwelling, in pits or banks, or in caves or outdoor cellars. Others can be kept in any dry place, such as the pantry or attic.

The Storage Room in the Basement.

Many houses are heated by a furnace in the cellar. The pipes are, as a rule, carried under the joists, thus warming the cellar to some extent. For this reason it is best to partition off a small room in one corner of

(*Continued on page 7.*)

SWEET-POTATO STORAGE.

Nonpatented Storage Houses Effective—No Need to Pay Fancy Prices for Patented Plans.

There is no mystery about building a satisfactory storage house for sweet potatoes. Southern farmers who are paying large prices for patented plans and equipment alleged to provide the only successful way of storing sweet potatoes, are being defrauded. Specialists of the United States Department of Agriculture whose attention recently has been called to instances in which farmers have paid as high as $750 for sets of plans, do not hesitate to brand such activities as plain humbuggery. Plans of houses that incorporate the simple principles of storage and common-sense methods of construction, and which have proved successful by years of careful trial, are furnished free by the department to any farmer who will ask for them.

Misleading Reports Circulated.

Because reports have been made and circulated in the South that storage houses recommended by the department are not satisfactory, it is believed necessary, now that the time to provide adequate storage for the coming harvest is at hand, to correct such statements. One man with plans to sell has said that the shrinkage of sweet potatoes stored in houses designed by the Government specialists is from 16 to 20 per cent, while in houses of his design there is practically no shrinkage. The fallacy of such a claim, department specialists point out, lies in the fact that shrinkage is essential to good keeping of the potatoes. Sweet potatoes stored in the type of house recommended by the department shrink from 8 to 10 per cent—in weight, not bulk—by reason of evaporation of surplus moisture. Proper curing of sweet potatoes means getting rid of surplus moisture, and the type of house which the specialists suggest accomplishes this by combining the ordinary principles

of good ventilation with common-sense methods of construction.

Department Plans Give Satisfaction.

Storage houses built according to plans suggested by the department have been in use in every State of the South for five or six years. The department has no knowledge of failure in any house built and operated strictly according to recommendations. Four years of investigation with 100 houses under observation showed that the average loss by decay, after an average storage period of 124 days, was less than 2½ per cent. In determining this loss representatives of the department personally graded the potatoes in each house—a total of 228,000 bushels. Every potato that had a decayed spot was thrown out and classed as decayed. In each case the potatoes were harvested, stored, and cared for by farmers. In the department's own storage house at Arlington, Va., sweet potatoes stored in October last year and removed the latter part of June showed a loss of less than 1 per cent.

Farmers intending to build storage houses should write to the Division of Publications, Department of Agriculture, Washington, D. C., for Farmers' Bulletin 548, Storing and Marketing Sweet Potatoes. This bulletin gives plans and lists of materials needed and also tells how to convert buildings such as abandoned tenant houses into storage quarters.

CLEAN AND REUSE OLD PARAFFIN.

Paraffin that has become unclean through usage in canning and preserving, may be cleaned and reused. Don't throw it away because dirt and trash have become mixed with it. Many times paraffin can be cleaned with a brush in cold water. If this does not remove all the dirt, says a specialist of the United States Department of Agriculture, heat the paraffin to boiling and strain it through two or three thicknesses of cheesecloth placed over a funnel. Or a thin layer of absorbent cotton over one thickness of cheesecloth may be used as the strainer. One straining should be sufficient ordinarily but if the paraffin still is unclean heat and strain again. Any paraffin lodging in the strainer may be recovered by heating the cloth and pouring off the hot liquid to another strainer.

Canned berries are bird proof.

Frost doesn't nip canned vegetables.

Can't eat 'em all in summer? Not enough in winter? Home canning is the answer.

CONSIDER THE PEANUT.

Annual Value Exceeds any Vegetable Except Potato—Beats Boll Weevil—Keeps Oil Mills Going.

While cotton is still king in the South, the peanut promises to dispute or to share its dominion in some sections as part of well-balanced farming practice. The State of Texas, for example, has planted 600,000 acres to peanuts, more than doubling the acreage of last year, according to figures issued by the United States Department of Agriculture. The prospective crop, on the same authority, is more than 70,000,000 bushels for the whole South. Texas already had the largest acreage in 1916, though in 1909 it stood sixth, with most of the Atlantic and Gulf Coast States ahead. Georgia jumped from 190,000 acres last year to 420,000. The increase in Texas has been an index of the increase throughout the lower South, though the proportionate increase elsewhere has not been so great. For the South as a whole, however, it is remarkable that the acreage has increased from less than a million and a quarter acres to more than two million acres.

Has Long Been Important Crop.

The peanut may have been held in light esteem in the popular mind because of its association with circus and clown, or because the expression "peanut politics" has designated a low form of partisanship. Yet this crop has long been important in North Carolina, Virginia, and Georgia, with Suffolk, Va., as the headquarters of the industry. Here the price of peanuts is to a large extent established for the whole country, and at prevailing prices peanuts are in competition with cotton.

Beating Boll Weevil.

The boll weevil drove many a Texas farmer to peanuts. From what seemed to be a hopeless situation the peanut has rescued him, and at the same time rescued the oil-mill men who were on the verge of a shutdown with their supply of cotton seed diminished. The department had long been advocating a change from the single-crop standard set by cotton. As long as cotton was the only money crop the arguments fell on deaf ears, but, backed up by the boll weevil, the campaign began to bear fruit. The farmers began to give part of the cotton acreage to peanuts. This presented a new problem and the oil-mill men began to ask questions.

They found that many of the growers were "hogging down" the peanuts; that is, they were turning the hogs into the fields to harvest the nuts, and were marketing the crop "on the hoof." The department had proved that a 40-bushel crop of Spanish peanuts would produce more than 400 pounds of pork to the acre, and supplied a good ration that needed only a little topping off with corn to harden the meat. Furthermore, if the peanut hay is harvested before the hogs are turned in, the hay alone almost pays for the growing of the crop, because it furnishes a palatable food to which all kinds of stock will turn eagerly from any other kind of hay. And if that were not enough, the peanuts, in common with other legumes, bear nodules on their roots which gather nitrogen from the air and put it into the soil.

Helping Oil Men.

Practically no peanut oil was made in this country prior to 1915. So far the oil-mill men had not been benefited, but it was brought to their attention that the United States, in 1914, was importing 1,332,108 gallons of peanut oil, and 44,549,789 pounds of nuts. More than half of the oil went to Chicago and presumably went into oleomargarine and the lower grades into soap. The oil brought more than cottonseed oil. A few changes in the oil mills, having to do largely with the cleaning of the peanuts, and they were ready for the extraction, and the peanuts began to come to them. Recently there has been such a demand for the nuts themselves, for manufacture into products elsewhere, that the mills have not been doing much extraction, because they could make more handling the nuts themselves than they could by selling the extracted product. A single manufacturer of peanut butter, for example, uses more than 200 carloads of shelled nuts a year and expects soon to go to 500 carloads.

Bakers use immense quantities in cakes and confections, and it is stated that many a chocolate cake is coated with a mixture of which peanuts form a considerable part. With imports cut off by the war, prices are high and give a present large impetus to growing peanuts, and even at present prices for cotton peanuts are more profitable where there is serious depredation by the weevil.

Where Peanuts Excel.

The South has a great deal of sandy soil, and in many sections corn succumbs to the dry weather just at the time when it most needs moisture. Such soils in such sections furnish just the right conditions for peanuts, which require less rain than corn. If the peanut could choose its own bed, it would pick these sandy lands as just the right place.

Furthermore, the peanut improves these lands if proper methods are maintained. Of course, if the pea vines are removed for hay and the roots are wholly dug out in harvesting the crop, they will exhaust the soil just as any other crop will where everything is taken away and nothing is returned.

It is a fortunate circumstance, however, that the nuts themselves grow just below the surface of the ground, while the nodule-bearing roots go considerably deeper. A plow digger which will go just below the nuts and cut the roots off at that point leaves the nitrogen-bearing part in the soil, and the same is true of a modified potato digger also used in harvesting the crop. Even if a good many nuts are lost by cutting them off too close, the nitrogen left in the soil by saving the roots is said to be worth from $3 to $8 an acre, and it would take a good many peanuts to make up this value. If hogs are turned in, even these peanuts are saved and are turned into bacon, while their manurial value goes back into the soil.

Peanut-Oil Market.

Peanut oil promises to be in greater demand than ever before because, according to the Department of Agriculture authorities, it is one of the most important of the world's food oils, and doubly important under present conditions. With European imports cut off and a scarcity of cottonseed oil there is every assurance of a considerable demand at good prices. American mills, however, are not getting the best prices for their product because they do not shell and clean the nuts and remove the germs. Where this is done, and the first pressing is made without heating the material, the extracted oil is clear and clean and equal in quality to the finest imported olive oil, though of a different and more nut-like flavor. To many persons it is more palatable than olive oil.

The Spanish type of peanut should be grown for oil, and the only additional equipment needed is that used in peanut cleaning and shelling factories. Peanut meal, left as a by-product of oil extraction, is a very nutritious stock feed.

Balanced Agriculture.

The department's advice is not to substitute peanuts for cotton and thus maintain the uneconomic system of one-crop agriculture. On the contrary, the advice is to utilize the peanut in certain sections by making it a part of a well-balanced agriculture and especially by using it in areas of serious boll-weevil depredation as part insurance against cotton losses. The farmer need not hesitate to plant a somewhat larger acreage than his present needs for hog and cattle feed. If the price happens to be low, he can buy more hogs and market the peanuts in that way; if the price happens to be high, he can sell the surplus to advantage. To raise peanuts year in and year out as the sole money crop would be as unwise as to depend upon cotton alone.

To utilize left overs is valuable; it is still better to plan meals so that there will be little or nothing left over.

FALL FORAGE FOR HOGS.

With Plenty of Pasturage Pigs Will Make Continuous and Profitable Growth.

Fall hog pastures include succulent crops as well as grain crops to prepare the pig for the short, heavy grain feed fed later in the season to finish for market.

Sorghum and Rape.

These two plants will furnish a limited amount of green feed from summer until late fall if given an occasional period during which to recuperate, and not pastured too heavily. They furnish succulence to keep the digestive tract in good condition, and nutriment to grow bone and muscle.

Velvet Beans.

This crop is coming into prominence in the far South as it produces an abundance of protein food at a relatively low cost. Sow in drills after corn planting time with some supporting crop such as sorghum or corn, and cultivate until the beans begin to vine. If pastured in October after the beans are mature, pigs should gain from 1 to 1½ pounds per head per day.

Peanuts.

Where the season is favorable for their growth, peanuts are one of the best fall forages for pigs. The only cost of the crop is for seed and cultivation as the pigs do their own harvesting. The Spanish variety is best for this purpose and should be planted four months before danger of frost at the rate of 12 to 16 pounds of shelled nuts per acre. The pigs may be turned on the pasture as soon as the nuts are well formed, in which case they eat some of the foliage as well as the nuts. Peanut pasture will furnish grazing for about two months and with a small amount of corn to prevent the pork from becoming soft, will make gains of over a pound per head each day.

Cowpeas and Soy Beans.

Plant cowpeas in July for fall grazing Sow in rows at the rate of 3 to 4 pecks per acre. This gives opportunity to cultivate and prevents trampling of the plants by the pigs. Cowpeas should be grazed as soon as the first pods formed contain peas in the dough stage, as there is no uniformity in the ripening of the peas. Much of the food value is in the leaves. When cowpea pasture is supplemented with a small amount of corn to balance the ration the rate of gain is approximately one pound per head each day.

Plant soy beans shortly after corn-planting time to pasture in from 90 to 120 days, depending upon the variety. The culture is similar to that for cowpeas. Soy beans should be more mature than cowpeas when pastured, keeping the hogs off until the lower leaves turn yellow and drop off and the beans become firm. Soy beans produce more grain per acre than cowpeas and fatten pigs more rapidly and with less corn supplement.

POULTRY SHOULD BE CHEAP.

Surplus of Nutritious Food Available if Retailers Take Small Profits.

A present congestion in the frozen-poultry market, shown by figures of the United States Department of Agriculture, can be relieved if the retail dealers will handle the goods at a reasonable advance over wholesale prices. This action would make poultry available at prices comparing favorably with other meats according to the findings of a conference recently held between wholesale poultry distributors and officials of the Department of Agriculture. Both parties to the conference say that more poultry should be eaten when the facts are understood by the consumer, and an increased use of poultry now, in the opinion of the department, will tend to conserve other meats which are of more importance to Americans and their allies in Europe. The retailers, as well as wholesalers, it is pointed out, should aid in relieving the congestion.

Broilers Plentiful and Less Expensive.

Broiling chickens are especially abundant and those of prime quality sold in June on the wholesale market in New York at an average price of 22 cents a pound. A year before the average price was 27 cents during the same month. There are unusually heavy holdings of dressed poultry in cold storage. Unless these stocks are moved quickly, farmers who have increased this year's flocks in response to a patriotic appeal will not have normal marketing conditions when their surplus comes on the market.

Retailers Must Help.

The parties to the conference agreed that the storage supplies of poultry in the summer of 1916 were unusually low because of small original holdings and large export demands. This resulted in unusually high prices to producers during the fall and winter of 1916. The supply was unexpectedly heavy and large stocks were stored at high costs. Then export demands fell off, the wave of economy affected the home demand, and the storage stocks moved slowly. The net result, according to the department, is that almost everybody ought to enjoy chicken dinners now at decidedly reduced prices and without a feeling that they are using up needed meat supplies. In short, it is said to depend on the retailers whether cheaper chickens will be available.

GET MORE POTATOES.

Possible to Increase Yield by Spraying Against Late Blight and Beetles.

This year no grower in the Northern States should overlook the chance to increase the potato crop by spraying, which is good insurance against a short crop. Every year the potato yield is reduced by preventable diseases and insect pests; yet it may be increased, as shown by the fact that sprayed potato crops in Vermont, for example, have produced on the average 105 more bushels to the acre than unsprayed crops over a period of 21 years.

Get Insects and Diseases Too.

Bordeaux mixture with lead arsenate added will prevent late blight and get the potato bug, or Colorado beetle, also. The mixture should be applied every two weeks, though the interval may be longer if the weather is dry and no insects are present. With the approach of the late-blight season, after the middle of July, a thorough protective spraying should be given. Cool, wet weather means trouble, according to the United States Department of Agriculture. Continued showers and an average temperature around 73° call for sprays once a week, or even every five days.

Kinds of Sprayers.

For home gardens, small hand sprayers will do. For the farm potato patch, where from one-half acre to 3 acres are grown and where there are orchard trees or small fruits to be sprayed, a barrel spray pump is recommended. The hand pump is mounted on a 50-gallon barrel and carried on a home-made two-wheel cart or in a farm wagon. If a cart is used, the nozzle may be fastened to the back to spray four rows, but to do good work with this, as with the lighter traction sprayers, it is necessary to go twice over the field, the second time coming back in the opposite direction. More thorough work can be done by hand spraying if the pump is fitted with one or two lines of ½-inch hose, 25 feet long, ending in a 4-foot gas-pipe extension. This requires a man for each line and one to pump.

Commercial growers should provide themselves with the most effective traction sprayer they can get. In these the pump is operated by a chain or gear drive from the wheels. It pays to get the best, as a pressure of from 120 to 150 pounds is needed.

A good nozzle is one of the most important parts of a spray outfit. The cyclone or eddy-chamber type, of which the Vermorel is an example, is the best. The spray should be a fine mist and should reach every part of the plant.

How to Prepare Bordeaux Mixture.

Bordeaux mixture is the only fungicide that has any practical value against potato diseases. Lime sulphur, powdered sulphur, and other new mixtures that have come into use in orchards are either injurious to the foliage, or are weaker in fungicidal action, or both. Experiments made by the department show that, for potatoes and other truck crops, nothing has yet been found to replace the copper fungicides.

Bordeaux mixture is made with copper sulphate, 4 pounds; quicklime, 4 pounds; and water to make 50 gallons. Suspend the copper sulphate in a gunny sack in a clean barrel containing several gallons of water. It should hang so as to be just below the surface of the water. When the sulphate is dissolved, which requires from three to four hours, remove the sack and stir into the barrel enough additional water to make exactly 25 gallons of the copper solution. Prepare the lime by slaking it slowly and thoroughly in a clean barrel, strain, and add enough additional water to make exactly 25 gallons of lime milk. Stir thoroughly. It is highly important to strain both ingredients before they are combined, as otherwise clogging of the spray nozzles might result. Use copper or bronze wire strainer of 18 meshes to the inch.

Pour the two ingredients together into another barrel, or better, directly into the spray tank, if it will hold 50 gallons. After the two solutions are combined stir the mixture very thoroughly. Do not put copper sulphate or Bordeaux mixture into tin or iron vessels; use wood or copper containers. Mix the Bordeaux as needed and apply at once. It is never so good after it has settled.

Stock Solutions.

Everyone who uses Bordeaux mixture frequently and in quantity will find it convenient to keep concentrated stock solutions on hand, as these keep indefinitely if the water which evaporates is replaced.

Build an elevated platform to hold the barrels. Some time before the day you wish to commence spraying suspend 50 pounds of copper sulphate to dissolve in a 50-gallon barrel of water. Slake 50 pounds of lime in another barrel and add water to make 50 gallons of lime milk. When Bordeaux mixture is needed stir both stock barrels and take from each as many gallons as the formula calls for in pounds. Dilute the copper sulphate in one barrel and the lime milk in another, each with half the water, and let the two run together into the strainer of the spray tank. Add the arsenate of lead or other poison, and stir well because thorough agitation is most important in making a good Bordeaux mixture.

Weeding will seem easy next winter when mother serves those home-canned string beans.

MARKING CONTAINERS.

How to Mark Quantity of Contents so as to Comply with the Requirements of the Food and Drugs Act.

The officials in charge of the enforcement of the food and drugs act have prepared a Service and Regulatory Announcement giving suggestions regarding the best way to label packages of fresh fruits and vegetables with the quantity of the contents in order that the labeling may comply with the provisions of the net-weight amendment to the Federal food and drugs act. The net-weight amendment provides that all packages of food entering interstate or foreign commerce must be plainly and conspicuously marked with the quantity of the contents in terms of weight, measure, or numerical count.

The Service and Regulatory Announcement follows:

The following suggestions are made in response to numerous inquiries for information as to the proper methods of marking the quantity of the contents on packages of various fresh fruits and vegetables under the net-weight amendment of the food and drugs act.

The articles listed below may be marked by either weight or dry measure, or, when packed in barrels, in terms of the United States standard barrel and its lawful subdivisions, i. e., third, half, or three-quarters.

Apples in barrels, boxes, cartons, and hampers. Cases or cartons containing graded apples may, if desired, be marked in addition with the number of apples per package.

Apricots, prunes, and plums in baskets, boxes, and cases. (When packed in small, open containers inclosed in crates, see paragraph relating to small, open containers.)

Beans (in pod) in baskets, boxes, and hampers.

Berries and currants in baskets. (When packed in small, open containers inclosed in crates, see paragraph relating to small, open containers.)

Cherries in boxes and baskets. (When packed in small, open containers inclosed in crates, see paragraph relating to small, open containers.)

Cucumbers in barrels, baskets, hampers, boxes, and crates. Containers of graded cucumbers may, if desired, be marked in lieu of weight or dry measure, with the number and length of the cucumbers.

Grapefruit in sectional cases. If desired, cases may be marked by dry measure and count, or by count and average diameter in lieu of weight or dry measure.

Grapes in baskets. (When packed in small, open containers inclosed in crates,

see paragraph relating to small, open containers.)

Lemons in sectional cases. If desired, cases may be marked by dry measure and count, or by count and average diameter in lieu of weight or dry measure.

Okra in baskets, boxes, and hampers.

Onions in crates, baskets, and hampers and in sacks of uniform quantity of contents. Cases containing graded onions may, if desired, be marked in addition with the number of onions per case.

Oranges in sectional cases. If desired, cases may be marked by dry measure and count; or by count and average diameter in lieu of weight or dry measure.

Oranges, satsumas, and tangerines, in half boxes. If desired, cases may be marked by dry measure and count, or by count and average diameter in lieu of weight or dry measure.

Peaches in boxes, cases, baskets, and hampers. Boxes and cases of graded peaches may, if desired, be marked in addition with the number of peaches per package. (When packed in small, open containers inclosed in crates, see paragraph relating to small, open containers.)

Pears in barrels, boxes, baskets, and hampers.

Peas (in pod) in baskets, boxes, and hampers.

Peppers in barrels, baskets, boxes, and hampers. (When packed in small, open containers inclosed in crates, see paragraph relating to small, open containers.)

Potatoes in barrels, crates, and hampers, and in sacks of uniform quantity of contents.

Quinces in barrels, boxes, baskets, and hampers.

Squash (southern), in crates, boxes, baskets, and hampers.

Tomatoes in boxes, "lugs," and baskets. (When packed in small, open containers inclosed in crates or "flats," see next paragraph.)

Small, Open Containers.

Pending a determination of the question as to whether the quantity of the contents must be marked on small, open containers, inclosed within crates or "flats," in which small, open containers are packed apricots, berries, currants, cherries, grapes, peaches, plums, prunes, peppers, and tomatoes, and unless public notice of not less than two months be given, the department will not recommend proceedings under the food and drugs act solely upon the ground that such fruits and vegetables in such small containers bear no statement of the quantity of contents. The crates inclosing such containers should, however, be marked with the number of small containers and the quantity of the contents of each.

Excepted for the Present.

Also, for the present, and until further public notice to the contrary of not less than two months, the department will not recommend proceedings under the food and drugs act solely upon the ground that the quantity of the contents is not marked upon the containers of the following articles, packed as described below. No objection will be interposed by the department to any trade marking which is not false or misleading.

Asparagus in boxes and cases.

Beets with tops, bunched, in drums and hampers.

Cabbages in crates.

Cantaloupes and casabas in crates and baskets.

Carrots with tops, bunched, in drums and hampers.

Cauliflower in crates and hampers.

Celery in boxes and crates.

Eggplant commonly wrapped in paper and packed in crates.

Kale in barrels, baskets, and hampers.

Lettuce in barrels, drums, baskets, and hampers.

Onions with tops, bunched, in drums and hampers.

Pineapples in crates.

Radishes, bunched, in drums and hampers.

Romaine in hampers.

Spinach in barrels, baskets, and hampers.

Turnips with tops in drums and hampers.

Regulation No. 29, relating to marking the quantity of food in package form, should be consulted. Special attention is directed to paragraphs (*d*) and (*e*) of that circular, which are as follows:

(*d*) If the quantity of the contents be stated by weight or measure, it shall be marked in terms of the largest unit contained in the package, except that, in the case of an article with respect to which there exists a definite trade custom for marking the quantity of the article in terms of fractional parts of larger units, it may be so marked in accordance with the custom. Common fractions shall be reduced to their lowest terms; decimal fractions shall be preceded by zero and shall be carried out to not more than two places.

(*e*) Statements of weight shall be in terms of avoirdupois pounds and ounces; statements of liquid measure shall be in terms of the United States gallon of 231 cubic inches and its customary subdivision, i. e., in gallons, quarts, pints, or fluid ounces, and shall express the volume of the liquid at 68° F. (20° C.); and statements of dry measure shall be in terms of the United States standard bushel of 2,150.42 cubic inches and its customary subdivisions, i. e., in bushels, pecks, quarts, or pints, or, in the case of articles in barrels, in terms of the United States standard barrel and its lawful subdivisions, i. e., third, half, or three-quarters barrels, as fixed by the act of March 4, 1915 (38 Stat. L., p. 1186): *Provided*, That statements of quantity may be in terms of metric weight or measure. Statements of metric weight should be in terms of kilograms or grams. Statements of metric measure should be in terms of liters or centiliters. Other terms of metric weight or measure may be used if it appears that a definite trade custom exists for marking articles with such other terms and the articles are marked in accordance with the custom.

APPLE-PACKING METHOD.

Community Packing Houses Help to Solve Labor Problems and Give Better Results.

Community apple-packing houses are likely to solve the problem of labor in handling, in a short period, the increasing apple crop of the Pacific Northwest. The success of the centralized packing plants in 1916, not previously tried to any considerable extent in this region, was indicated by the wide adoption of this plan last season when perhaps one-fourth of the crop in Oregon and Washington was packed in community houses. Investigations of the new enterprise last season conducted by specialists in the Bureau of Markets in the United States Department of Agriculture, and now published in a preliminary report, make available for interested organizations and individuals, suggestions as to best methods of constructing, equipping, and operating such packing plants.

Advantages of Community Packing.

The advantages of the community over the individual or ranch plan of packing, according to the specialists, are better and more uniform grading and packing, obtaining experienced labor more readily and using inexperienced labor more effectively, using expensive labor-saving equipment such as sizing machines and gravity conveyors which the small grower could not afford, and the simplifying and facilitating of inspection work.

Method Not Yet Perfected.

The community packing-house scheme is new and consequently an unperfected phase of the apple industry. Although the idea was widely employed last year, its adaptations were largely experimental. Investigation by department specialists was undertaken to sift from the various plans tried, the best and most economical method of handling apples through all the operations of picking, hauling from the orchard, receiving at the packing house, grading, sizing, packing, storing, and loading on the cars. Sixty packing houses at or near Spokane, North Yakima, Wenatchee, Cashmere, Entiat, Pateros, Brewster, Okanogan, Omak, and Walla Walla, Wash., and Hood River and Medford, Oreg., were included in the study. Of these 60 houses, 33 were operated as community houses, 7 were operated by dealers somewhat on the community plan, and 20 were ranch houses. Individual or ranch packing houses and operations were included in the investigation so that the efficiency and economy of the two systems might be compared.

While the investigators preferred not to draw definite conclusions from a single

season's work, the discussions of equipment, organization and personnel, a floor unit, general operation, and specifically the operations in two typical houses, which make up the report, provide for growers of the Northwest what should prove a helpful summary of methods that were most successful last year.

CARE OF ASPARAGUS BED.

Healthy Growth of Foliage Now Means Larger Crop of Shoots Next Season.

Don't ignore the asparagus bed, now that the cutting season is over. It has given you its food contribution; now see that it has plant food to make a good growth of foliage. Fertilize and cultivate well now to insure that strong, healthy growth which is essential to a good yield of shoots next spring.

That timely advice for gardeners is contained in a new publication of the United States Department of Agriculture, Farmers' Bulletin 829, Asparagus, which deals with asparagus growing both on a commercial scale and in the home garden. The bulletin discusses the culture of this vegetable, its various diseases, forcing, canning, and also good methods of marketing.

Fertilize After Cutting Season.

After the cutting season the ridges should be leveled and the asparagus bed thoroughly cultivated, says the writer of the bulletin. A good high-grade fertilizer then should be applied at the rate of 1,000 to 1,500 pounds to the acre. A fertilizer containing 2 to 4 per cent of nitrogen, 6 to 8 per cent of phosphoric acid, and 6 to 8 per cent of potash will give good results. Muriate of potash and kainit are preferable to sulphate of potash. Where the land is already heavily manured, the nitrogen may be left out of the fertilizer mixture. The fertilizer to be applied should be distributed broadcast over the bed or in a strip on either side of the row and thoroughly mixed with the surface soil by harrowing or cultivation. Flat cultivation should be practiced after the cutting season.

Preparing for Winter.

In many sections the asparagus plants are cut down as soon as the berries turn red, and after drying sufficiently they are burned to destroy any disease germs or insects that may be present. In regions where severe freezes occur it is doubtful whether the cutting and burning of asparagus tops is advisable. The old tops hold the snow and prevent deep freezing and the blowing of soil. Some growers thoroughly harrow the bed after the tops are removed, others throw a slight ridge over the row, but ridging is not necessary unless there is danger of injury by severe freezing during the winter. Where land is inclined to wash, cultivating and ridging in the fall are objectionable.

HARVESTING HINTS.

Hay, Grain, and Seed Bring Better Prices if Properly Harvested, Prepared, and Stored.

Careful handling often will get a high grade and a relatively high price for grain and hay which otherwise would grade low and sell low, say specialists of the United States Department of Agriculture.

It is worth while for producers to keep this fact in mind now that the harvest season for grain and hay is approaching in many sections. The supply of the best grades of grain and hay on the market is always light. This frequently may be attributed directly to poor handling and care. Quality always demands the best price, hence the greatest care should be exercised in harvesting and storing.

Practical Hay and Grain Hints.

Do not store damp grain or hay unless you have adequate facilities for frequent "turning" otherwise they are likely to go out of condition. Few farmers realize how small a percentage of moisture will cause otherwise good grain or hay to heat and deteriorate.

Never bale damp hay.

If your grain contains a large percentage of foreign material, clean it. It keeps better.

Feed low grades and screenings on the farm.

Do not mix varieties. In most cases it can be avoided. It nearly always causes the commodity you are selling to grade low.

Marketing and Storage Suggestions.

Remember at all times that there is nearly always a better market for clean, dry, and unmixed varieties of grain or hay than for that which is damp, dirty, musty, moldy, and off color.

Begin now to arrange for proper harvest and care of the coming corn crop. Remember deterioration of your crop this year because of careless handling and storage will mean an enormous loss both to you and the country.

Begin now to study your probable feed requirements for the coming year, and determine what quantity you will require and whether you will retain enough to meet your needs or purchase it.

Take Care of Next Year's Seed.

While it appears that there will be plenty of good seed winter wheat, seed winter rye, and seed of other fall-sown crops if the available supply is properly distributed, everyone who is contemplating sowing an acreage of any of these crops this fall should provide for his seed supply as soon as possible. It will be necessary to ship seed wheat into those sections where the wheat winter-killed badly. In other sections which produced a good crop, the best of that crop should be conserved either on the farms or in country elevators to meet the local and distant demands for seed purposes. If this precaution is taken there will be no need of sowing wheat, procured at the last minute, which, though of commercial value for milling, feeding, or other industrial purposes, is unfit for use as seed.

He who saves for himself for sowing, or aids his neighbors or others in securing seed that he knows to be good is rendering the patriotic service of facilitating increased production.

In order that they may render effective service in aiding the distribution of seeds, the Bureau of Markets, United States Department of Agriculture, and the various State and local organizations will appreciate receiving the names of persons who wish to buy or sell seeds.

IRISH-POTATO STORAGE.

(Continued from page 1.)

practical rule in regard to humidity, the bulletin already mentioned says, is to maintain sufficient moisture in the air to prevent the wilting of the tubers and at the same time to keep the humidity content low enough to prevent the deposit of moisture on the surface of the tubers.

If potatoes are piled in too large piles they may become overheated and deteriorate. Six feet is a good maximum depth to which to pile tubers in bins, and the area covered by each pile also should be limited. A good plan is to insert ventilated division walls at intervals through the pile or bin. These may be made by nailing relatively narrow boards on both sides of 2 by 4 uprights, 1-inch spaces being left between the boards. General ventilation for the whole storage house usually is accomplished through ventilating shafts in the roof.

Methods of Storage.

The possible ways to store potatoes, says the bulletin, are pits or earth-covered piles, in dugout pits or potato storage cellars, in insulated wooden structures, in substantial masonry or concrete houses, and in artificially refrigerated storage houses. The latter two methods are the most expensive. Pitting is the most primitive method of storage, but if properly done on well-drained locations is satisfactory in so far as the preservation of the potatoes is concerned. The chief drawback to pitting is that the potatoes are not always easily accessible in the winter.

Potato Storage Cellars.

The dugout pit or potato storage cellar is probably more widely used than any other type of storage space. Fitted with water-tight roof it is especially popular in the

central portions of the United States. In the arid and semiarid sections a type with sod or dirt roof is in most general use. As a rule, the excavation for the cheaper structures of the dugout pit or cellar type when erected on level or nearly level land does not exceed 3 feet. The soil removed from such an excavation, particularly if the dugout is of any considerable size, is ample for banking the side and end walls and also for the roof. The cost of construction may be greatly modified, according to the character of the location.

In the cheaper dugouts, where the soil is of such a nature as to remain intact it is allowed to form the side and end walls, the roof being supported on plates resting on the soil and held together by boards or joists. This form of construction involves a deeper excavation and a constant element of risk from a cave-in. In the more expensive and substantial structures the side and end walls are built of concrete.

Insulated Frame Structures.

Insulated frame potato storage houses are not used very extensively. As a rule they are better adapted to southern than to northern climatic conditions. The construction feature of such houses is the thorough insulation of their walls, ceiling, doors, and windows. This type of storage house is not to be recommended for northern locations, nor is it advocated for the South, except where poor drainage conditions will not permit the use of the dugout or cellar style of house. It is not recommended, because it can not be so economically constructed, nor does it furnish as good a type of storage as the properly ventilated cellar storage house.

The Aroostook Type of Storage House.

The Aroostook type of storage house, with concrete or masonry basement walls and wooden superstructure, seems to be distinctively a product of Maine, and so far as has been observed is not found to any extent outside of that State. It is an expensively constructed house and is almost always located on a sidehill or knoll in order that advantage may be taken of a ground-level entrance. That such houses have proved satisfactory to the potato grower in Maine is evident from the fact that practically no other style of potato storage house is in use in that State.

The Artificially Refrigerated Storage House.

The artificially refrigerated potato storage house is as yet hardly in existence. The present use of this type of storage house is confined practically to the holding of northern-grown seed potatoes in cold storage for second-crop planting in the South.

Butter or sirup eaten on pancakes not only makes them more palatable, but it is also a valuable source of body fuel.

COLD STORAGE.

Many Concerns Not Engaged in Commercial Storage Business in Position to Take up this Work.

Fruits and vegetables well may be preserved through freezing storage in the present food emergency by concerns not primarily engaged in commercial cold-storage operations, say specialists of the United States Department of Agriculture. Many hotels, restaurants, and ice-cream factories are equipped with facilities for refrigerated storage; and pie factories and other large users of fresh fruits and vegetables may find it advantageous to provide similar means for the preservation of their raw materials or utilize the facilities of the large public cold-storage houses, with which most of the large communities are provided.

Temperature in Which to Store.

The fresh products should be stored in a temperature of 10° to 16° F. until they are to be used. Sweet corn on the cob, string beans, green Lima beans, beets, asparagus, parsnips, peas in the pod, Budlong spinach, raspberries, strawberries, cranberries, blueberries, gooseberries, blackberries, loganberries, currants, plums, and cherries are among the perishables that already have been kept satisfactorily in this way to some extent, the specialists point out. These products, however, must be cooked within a few hours after removal from the freezing temperatures.

Reduction of Waste.

Undoubtedly the extension of the practice by concerns having freezing storage available would help to a considerable extent in reducing the waste of perishables. If such practices were adopted generally, the canning of much food to be held for periods of 6 to 8 months could be obviated. Tin cans, therefore, could be released for more extensive use in canning foods which could be preserved in no other way.

HOME STORAGE.

(Continued from page 1.)

the cellar to serve as a storage room for potatoes, beets, carrots, parsnips, salsify, and turnips. If possible, this room should have at least one window for the purpose of regulating the temperature. The floor should not be concreted, as the natural earth makes better conditions for the keeping of vegetables. Bins may be constructed for the various products, or they may be stored in boxes, baskets, or barrels. This room will also serve as a storage place for fresh fruits and canned goods. The vegetables to be stored should be harvested when the ground is dry, allowed to lie on the surface long enough for the moisture to dry off before placing them in storage. The tops should be removed from beets, turnips, carrots, and salsify before placing them in storage.

Outdoor Pits or Banks.

Outdoor pits or banks are very generally used for keeping potatoes, beets, carrots, turnips, parsnips, cabbage, and salsify. Select a well-drained location and make a shallow excavation, some 6 or 8 inches deep, and of suitable size. This is lined with straw, leaves, or similar material, and the vegetables placed in a conical pile on the material. The vegetables are then covered with straw or similar material, and finally with earth to a depth of several inches. The depth of the earth covering is determined by the severity of the winters in the particular locality. It is well to cover the pits with straw, corn fodder, or manure during severe weather. Such pits keep the above vegetables very well but have the objection that it is hard to get the material out in cold weather, and where the pit is once opened it is desirable to remove the entire contents. For this reason several small pits rather than one large one should be constructed, so that the entire contents may be removed at one time. Instead of storing each crop in a pit by itself, it is better to place several vegetables of similar keeping quality and requirements in the same pit, so that it will only be necessary to open one pit to get a supply of all of them. In storing several crops in the same pit, it is a good plan to separate them with straw, leaves, or other material. The vegetables from the small pit may be placed in the basement storage room where they can be easily secured as needed for the table.

Cabbage.

Cabbage may be stored in a special kind of bank or pit. The excavation is made long and narrow and about the same depth as for the other vegetables. The cabbages are pulled and placed in rows in the pit with the heads down and roots up. The whole is covered with dirt—no straw or litter need be used. These pits are made as long as desired, as it is possible to remove portions of the stored product without disturbing the remainder. Cabbage need not be covered as deeply as potatoes, as slight freezing does not injure the cabbage. The heads of cabbage are sometimes stored in banks or pits in a manner similar to potatoes, turnips, etc. This method is open to the same objection as when it is used for potatoes—it is hard to get at the material when it is needed. Another method of storing cabbage consists in setting the whole plant in trenches side by side with the roots down and as close together as they can be placed. Dirt is thrown over the roots and against the stalks to the depth of several inches. A low fence is built around the storage place, and rails, scantling, or other supports laid across the top. About 2

feet of straw or other material is then piled on top of the storage pit.

Celery.

Celery may be stored in a modified type of outside pit or in the row where it is grown. When stored in a pit or trench, the plants are taken up and set side by side in a shallow pit as close together as it is feasible to pack them and wide boards set up along the outside of the pit. Dirt is banked against these boards, and the top covered over with corn fodder or similar material. When celery is kept in the row where it is grown, the earth is banked up around the plants as the weather gets cold. When freezing weather occurs, the dirt should be brought to the tops of the plants and the ridge covered with coarse manure, straw, or fodder, held in place by means of stakes or boards.

Outdoor Caves or Cellars.

Outdoor caves or cellars are superior to banks or pits in many respects. They require no more labor to store the vegetables than an indoor cellar, yet give a uniform and low temperature during the entire year. They possess practically all the advantages of the bank or pit, yet may be entered at any time during the winter for the removal of any portion of the stored product without endangering the keeping quality of the material that remains. These storage cellars are usually made partially under ground, although in the southern portion of the country they are usually entirely above ground. In sections where severe freezing occurs it is well to have the cellar partially under ground. In order to avoid steps down to the level of the floor, with the consequent extra labor in storing and removing the vegetables, a sidehill location is desirable for the cellar. An excavation is made into the hill of the approximate size of the cellar. The dirt from this excavation may be used for covering the roof and for banking against the sides of the structure. A frame should be erected by setting posts in rows in the bottom of the pit near the dirt walls, saving these off at a uniform height, placing plates on top of the posts, and erecting rafters on these plates. The whole should be boarded up on the outside of the posts, with the exception of a space for a door in one end. The whole structure, except the door, is covered with dirt and sod. The thickness of the covering will be determined by the location. The colder the climate, the thicker the covering. The dirt covering may be supplemented by a layer of manure, straw, corn fodder, etc., in winter time. Outdoor cellars are usually left with dirt floors, as a certain amount of moisture is desirable. These cellars may also be made of concrete, brick, stone, or other material. Such cellars are to be found in many sections of the country, and provide almost ideal storage facilities for potatoes, beets, turnips, carrots, parsnips, salsify, and celery.

Irish Potatoes.

Irish potatoes can be stored in pits, root cellars, or above-ground, frost-proof storage warehouses. Small quantities, or even carload lots of potatoes are often placed in pits in the field when other storage facilities are not available. Immature potatoes can not be successfully stored for any considerable period even in the best of storages, and should never be pitted or buried. Well-matured tubers of either early or late sorts, if sound and in a dormant condition upon the advent of freezing weather in the autumn, may be kept until required for table use or for planting by pitting, storing in potato cellars, of which there are many designs, or in above-ground, frost-proof buildings. The commercial storage of Irish potatoes is discussed in Farmers' Bulletin 847, Potato Storage and Storage Houses.

Sweet Potatoes.

Sweet potatoes should be thoroughly matured before harvesting, dug while the ground is dry, carefully handled, and thoroughly cured by holding them at a temperature of 80° to 85° F. for a week or 10 days after harvesting. After this they should be stored in a place where the temperature remains in the neighborhood of 55° F. Such a location is usually near the furnace in a cellar, or near the furnace chimney on the second floor of the house. There is little merit in wrapping them in paper or burying them in sand. Sweet potatoes are stored in outdoor pits or banks, but this method is not to be recommended except where no other facilities are available. Sweet potatoes stored in pits are not as good in quality as those stored in houses. For further information on storing sweet potatoes write for Farmers' Bulletin 548.

Onions.

Onions should be well matured before harvesting, and should be allowed to become thoroughly dry before being stored. They may be put up in baskets, crates, or bags, and placed in a cool, dry place. The attic is better than the unheated cellar for storing onions. Temperatures slightly below the freezing point do not injure them, provided they are not moved or handled while frozen. The commercial storage of onions is briefly discussed in Farmers' Bulletin 354.

Beans, Peas, and Other Dried Products.

Such vegetables as may be kept in the dry state should be grown to as great an extent as possible. Various kinds of beans, including Lima beans, should be allowed to dry on the vines. Lima beans should be gathered as they mature, and placed in a warm, dry place until dry enough to shell. Navy beans and kidney beans are usually harvested when a maximum number of pods are mature and before the ripest pods open and the vines cured like hay, after which they are threshed or shelled. Peas are handled in the same way as navy beans. After the beans and peas are threshed or shelled they should be placed in bags and hung in some dry place, such as a closet or attic.

Dried corn, dried apples, peaches, apricots, raspberries, etc., may be stored in the same manner. All dried products should be protected against insects, rodents, and dirt.

MIGRATORY BIRDS.

Proposed Amendments to Regulations for Their Protection.

The United States Department of Agriculture has proposed for adoption regulations amendatory of the regulations for the protection of migratory birds approved by the President August 21, 1916. A period of three months is allowed in which the proposed amendments may be examined and considered before final adoption, and will become effective on or after October 15, next, whenever approved by the President.

The proposed amendments prescribe a daily closed season on all migratory game and insectivorous birds from sunset to half an hour before sunrise, instead of a closed season from sunset to sunrise, as prescribed by the present regulations.

Changes Proposed.

The following changes relative to the waterfowl season are proposed: Pennsylvania, Wisconsin, Minnesota, North Dakota, South Dakota, Montana, Wyoming, Colorado, Nevada, Idaho, and that portion of the States of Oregon and Washington lying east of the summit of the Cascade Mountains: Open season, September 16 to December 31, both dates inclusive.

The changes are suggested to unify the seasons on waterfowl in the northern zone, and in most instances are made to conform with the open seasons under State laws.

In response to numerous inquiries the department has advised that the Federal migratory-bird regulations are not to be construed to authorize the killing of migratory birds at any time when it is unlawful to kill them under State laws.

WEEKLY FORECASTS.

Arrangements have been made by the Weather Bureau whereby the forecasts of weather and temperature for the coming week, issued Saturday by the bureau, are telegraphed to about 250 of the principal rural telephone companies throughout the 13 principal grain-growing States, with the understanding that the forecasts are to be distributed over the lines of these companies. The forecasts are sent out shortly before noon, and subscribers who do not receive the forecasts by that hour, and desire them, should call for them.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

WEEKLY NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IV WASHINGTON, D. C., AUGUST 1, 1917. No. 52

PRESIDENT WILSON URGES SAVING OF PERISHABLES.

Indorses Efforts of Secretary of Agriculture to Promote Canning, Drying, and Storage to Prevent Waste of Vegetables and Fruits in 24 States.

President Wilson has addressed to the Secretary of Agriculture the following letter commending the plans of a special committee to encourage the canning, drying, preserving, and storing, as well as increased consumption of perishable fruits and vegetables—especially in the 24 States where important surpluses of these products are indicated.

THE PRESIDENT'S LETTER.

THE WHITE HOUSE,
Washington, July 28, 1917.

MR. SECRETARY AND GENTLEMEN OF THE COMMITTEE: I very earnestly desire to commend your plans and to second your efforts to secure the conservation of surpluses of perishable food products. Out of the depths of their patriotism the farmers of the Nation gave an immediate and effective response to my appeal to increase production. Providence favored them and we have not only the prospect of increased crops of a number of staples but also the certainty of a large production of fruits and vegetables.

But increased production, important as it is, is only a part of the solution of the food problem. It is of the first importance that we take care of what has been raised and make it available for consumption. This task is of peculiar urgency with reference to our perishable farm products. It is essential not only that adequate measures be taken to secure their conservation but also that the Department of Agriculture redouble its efforts to assist producers in the matter of marketing.

I am informed that in many sections in which fruits and vegetables have been produced in abundance the people already are canning and drying them in large quantities. But we should be content with nothing short of the perfection of organization and should be unwilling that anything should be lost. In this hour of peril, I am concerned, as I know you are, with the necessity of avoiding waste. Every bushel of potatoes properly stored, every pound of vegetables properly put by for future use, every jar of fruit preserved, add that much to our insurance of victory, add that much to hasten the end of this conflict. To win we must have maximum efficiency in all directions. We can not win without complete and effective concentration of all our efforts.

We can all aid by increasing our consumption of perishable products. Such of them as we can efficiently utilize, we must utilize, and, by so doing, relieve the strain on our store of staples. We must aim to consume these things locally so far as possible and thus relieve the pressure on transportation agencies, freeing them for the more efficient handling of products required for military purposes. What we can not presently consume we must conserve.

The service we are asking the people to render in this matter is a public service. It is one primarily for the household. Upon the housewife much of the burden of the task will fall. I join you in your appeal to the women of the Nation, whether living in a city, town, or country, to devote their time, so far as it may be feasible and necessary, to the performance of this very essential work. Among them some will be found who are fitted by experience to teach others, and they will put their knowledge whole-heartedly at the service of their neighbors.

I am sure that we may confidently count upon the cooperation of the editors of the Nation in disseminating the necessary information. I am equally certain that the governors and the food committees appointed by them in the States in which this problem is urgent will leave nothing undone to attack it promptly and to assist in solving it.

Faithfully yours,

(Signed) WOODROW WILSON.

(*Continued on page 2.*)

The States in which heavy production is indicated and in which serious spoilage of food will result unless unusual efforts are made by their citizens are:

Arizona.	Michigan.	South Dakota.
Colorado.	Nebraska.	Tennessee.
Connecticut.	New Hampshire.	Utah.
Idaho.	New Jersey.	Vermont.
Indiana.	New York.	Virginia.
Iowa.	North Carolina.	West Virginia.
Kentucky.	Pennsylvania.	Wisconsin.
Maryland.	Rhode Island.	Washington.

The particular vegetables that have been raised in home yard gardens in cities and rural communities, as well as by farmers in abundance are: Tomatoes, beets, potatoes, beans, cabbage, onions, sugar corn. peas, carrots. The fruits are: Peaches, pears, apples, and in some of the States, blackberries.

Committee on Preserving Fruits and Vegetables.

Local authorities in many of these States have asked the United States Department of Agriculture to lend Federal assistance to their efforts to encourage and instruct their citizens in preventing waste of perishable foods. To direct the department's efforts to aid the conservation movement, the Secretary of Agriculture has appointed the following committee on preserving fruits and garden products, with A. D. Lasker, of Lord & Thomas, Chicago, as chairman:

John Callan O'Laughlin, Washington, D. C. (newspaper correspondent), C. J. Brand, chief Bureau of Markets, Dr. C. L. Alsberg, chief Bureau of Chemistry, Clarence Ousley, Assistant to the Secretary, W. M. Wilkes, Indianapolis, Ind. (representing Van Camp Packing Co.), G. Thomas, Washington, D. C. (B. F. Sturtevant Co.), J. O. Ross, Boston, Mass. (B. F. Sturtevant Co.), and F. C. Ball, Muncie, Ind. (president Ball Glass Manufacturing Co.).

H. W. Phelps, New York City (vice president American Can Co.), and F. E. Gorrell, Washington, D. C. (secretary National Canners' Association), participated in an advisory capacity in the preliminary conferences of the committee.

Plans for Conserving Perishables.

This committee already is organized and is beginning in the 24 States most affected a three-weeks' intensive, whirlwind campaign of education to induce every household to utilize and save perishable products by canning, drying, and proper home storage. Every available channel of communication will be utilized to carry to every household definite, simple instructions for canning, drying, and storing with ordinary home equipment, the perishable products plentiful or about to become abundant in its neighborhood. Every daily newspaper, including those published in foreign languages, has been requested to publish in each issue practical advice on food conservation developed by the department's food specialists, and prepared by experienced writers. Women who understand canning and drying are to be urged to put their knowledge at the service of their neighbors and to help them conserve fruits and vegetables. Chambers of commerce, commercial organizations, women's clubs, schools, and other institutions are to be encouraged to provide practical demonstrations conducted by local volunteers.

State Forces to Cooperate.

The Department of Agriculture will assign its field force of canning and drying specialists for intensive service in the campaign, and through the cooperation of the State agricultural colleges, the cooperating county agents—men and women—and leaders of the canning clubs will direct and lead the movement in their special territories. The plans include also effective cooperation with all State or local agencies in a position to demonstrate or encourage the saving of food.

Supply of Glass Jars Ample.

The keynotes of the propaganda will be: "No fruit or vegetables allowed to rot or spoil in field, orchard, or market. Not an empty preserving jar in any household or store." The survey of the supply of glass jars recently completed indicates that there is an abundance of glass containers of the screw-top or Mason jar type already in the hands of dealers. Manufacturers state that they are able to produce them at the rate of 864,000 a day for the next hundred days, if necessary. This commercial supply of containers, together with the vast store of old jars available for reuse in many homes, should make it possible for housewives to put up for winter consumption within the next few weeks millions of pecks of fruits and vegetables which otherwise would spoil.

To Stimulate Immediate Consumption.

To supplement the canning and drying campaign, the committee has arranged for special propaganda designed to induce the public to eat more fruits and vegetables while they are locally plentiful and thereby lessen the drain on meat, eggs, and other staple foods. It is believed that with little change in dietary habits and with actual benefit to health, in many instances, every family, by eating perishable summer foods, can reduce the consumption of staples importantly and save large amounts of food for military and other vital purposes now and later in the season.

The committee in charge requests every citizen to follow closely suggestions and instructions to be published within the next three weeks in the daily press and agricultural publications in the 24 States. The Department of Agriculture, Washington, D. C., has ordered unusually large editions of its practical bulletins on home canning and drying, and these it will be glad to supply free to applicants. Citizens also should seek the practical advice of their county agent and their State agricultural college and to attend the demonstrations or lectures on canning and drying announced for their localities.

WASTE NOT, WANT NOT.

How to Save Garden Surplus Is Described in Recent Bulletins.

Those who heeded the advice of the United States Department of Agriculture to plant gardens this year are now wondering how best to preserve their surplus fruits and vegetables. The specialists of the department, who have tried out various methods for canning, preserving, drying, pickling, and making jam, have recently issued bulletins showing how this work may be done successfully. Anyone can have these publications for the asking, so ignorance of the proper procedure will not serve as a legitimate excuse for allowing any garden produce to spoil this year. The bulletin on canning also gives tried and tested recipes for making jams, fruit butters, marmalades, preserves, and jellies.

If You Can't Can, Dry.

When canning is not feasible or cans and jars are too expensive, drying offers a means of saving large quantities of surplus products which go to waste each year. Drying also affords a way of conserving portions of food too small for canning. Drying may be done in the sun, over the kitchen stove, or before an electric fan. Farmers' Bulletin 841 tells just how to do this, using one of the driers now on the market or a homemade apparatus.

These bulletins are sent on request to the Division of Publications, Department of Agriculture, Washington, D. C. Send for some copies for yourself and tell your neighbors about them. Fruits and vegetables preserved in any of these ways will help you in planning your three meals a day next winter.

Everybody can! Put your spare time into cans and jars.

See that jars, cans, and processing outfits are ready to do business as soon as fruits and vegetables ripen.

LOOKING FORWARD IN FARMING.

Activities for August—Get Ready for the Rush of Fall Work—Make Every Effort to Save Perishable Fruits and Vegetables.

NORTH AND WEST.

Sow Rye—Care for Fruit—Fill Silos—Save Grain—Raise More Poultry—Keep Accurate Accounts.

The following suggestions, particularly applicable to winter wheat and rye sections, are from the Office of Extension Work in the North and West, United States Department of Agriculture.

Wheat.

The wheat crop was considerably below normal last year. Because of winter-killing it will not exceed normal this year, although the acreage planted last fall was sightly above normal.

With the increasing demand of our own country for wheat, the great needs of Europe, losses likely to occur through the sinking of grain ships and the destruction of elevators, and with the possibility always of unfavorable weather before us, it would seem that farmers are entirely safe in all normal wheat-growing sections in putting in not only a full winter-wheat acreage, but considerably more than the normal. The high price of wheat, present and prospective, fully warrants also the greatest cultura care this fall. Early plowing and cultivation to insure a firm seed bed, variety adapted to the soil and community; selected, thoroughly clean seed and treated seed while always desirable are imperative this year.

Now is the time to organize for control of the Hessian fly in fall-sown wheat. Systematic campaigns for this purpose under the leadership of the county agents have been very successful in the past. An actual saving to farmers of over $7 per acre has been reported as a result of demonstration work done on over 7,000 acres of wheat in Kansas, Indiana, Missouri, and Montana. The county agents have taken the leadership in such work, but it is effective only when backed up by efficient county organization and support.

Rye.

On the lighter, sandier lands where wheat can not be successfully grown without large quantities of fertilizers, or in regions where danger of winter-killing makes the growing of winter wheat extremely hazardous, rye should be sown this year. Rye is a more certain crop on light lands and without fertilizer than wheat and the price promises to be unusually attractive. Rye is very acceptable in Europe as a substitute for wheat in bread. Plant up to the full limit of nor-

(*Continued on page 4.*)

MARKETING.

Perishable Crops Should Be Handled with Unusual Care—Points for Cotton Growers.

The following seasonal recommendations are made by the Bureau of Markets, United States Department of Agriculture.

All farmers engaged in the production of perishables should keep clearly in mind the necessity of the maximum conservation and utilization of all perishable fruit and vegetable crops produced.

After the crop is grown no factor is of greater importance than proper and careful handling throughout all harvesting operations. In harvesting and packing every means should be taken to insure careful handling, picking, hauling, packing, and loading. Careless handling will cause loss and deterioration in transit, reduce materially the returns to the growers and shippers, and will lessen the food supply of the country.

In this emergency, in so far as possible, perishables must replace staples as food. It is essential that every agency concerned in the handling and the transportation of our perishable foodstuffs exercise every precaution to insure sound delivery of them to consumers; avoid bruising and rough handling, and get all fruits or vegetables which normally are transported under refrigeration into the refrigerator car as quickly as possible. Every car should be loaded in such manner as to provide, if possible, straight uninterrupted channels for free air circulation from end to end of the car.

Save Car Space.

If the load is properly stowed and braced many products can be loaded heavier than is the usual practice. With the shortage of refrigerators and other equipment used, it is essential to load every car as heavily as is consistent with safety.

Provide Adequate Storage.

Provide adequate storage for fruits and vegetables. Unless adequate storage facilities are provided this fall for such fruits as apples and pears, and for vegetables like Irish and sweet potatoes, millions of bushels of these valuable food products will be lost. It is becoming increasingly difficult to move the crops from various sections during the harvesting season. This year, with the unprecedented demand for cars for every pur-

(*Continued on page 7.*)

IN THE SOUTH.

Cultivate—Plant a Fall Food Acre—Order Fertilizers—Prepare for Fall Crops.

The Office of Extension Work in the South, United States Department of Agriculture, urges that the matters discussed below have immediate attention.

The situation in the South at the present time is one of extremes. In the northern and especially the northeastern part of the southern territory the farmers are troubled with excessive rains, while in the southern and southwestern portions they have had continuous and severe drought. Farmers should plan their work to meet these conditions.

Cultivate as Late as Possible.

Cultivation should be continued as late as possible for two purposes:

First. To kill weeds and grass. This applies more particularly to the northern and northeastern sections of the Southern States.

Second. To conserve moisture, and in cotton to minimize the boll-weevil damage. This applies to the southern and southwestern sections.

Late cultivation should be shallow to avoid cutting the roots. In the extreme western and southwestern sections where drought is severe an ample dirt mulch should be maintained to conserve moisture.

Plant a Fall Food Acre.

Do not forget the fall food acre. Secure from your county agent the plan for planting crops on one acre for food for the family and feed for the livestock.

In dry territory where the hot winds have prevented corn production, cut and remove the stalks from the field in August and prepare the land for small grain and cover crops.

Clean up pastures and meadows by cutting the brush and weeds. This will improve the grazing this season and destroy harmful seeds maturing to cause trouble next season.

August is a good time to put tools and machinery in shape for next season. They should all be well housed, painted, and oiled to prevent damage.

In August begin the preparation for fall and winter crops. Select the locations best suited to the different crops to be planted. Get your seed and fertilizer on hand ready to be used.

If you have livestock to feed and your land is suitable, do not forget that the fall is the proper time for seeding alfalfa. In procuring the seed for this crop accept only guaranteed western-grown seed and do not be persuaded to use foreign-grown seed.

Crimson-Clover Seed Scarce.

In time of peace and with normal prices the department would recommend the seeding of bur and crimson clover, but at the present time no farmer should plan to use bur or crimson clover unless he can obtain good seed at a reasonable price. The seed of crimson clover is especially scarce and high priced. The use of these crops is good agricultural practice in normal times, but in this time of emergency the land would probably best be put in rye, wheat, or winter oats.

If you have oats that you have grown yourself, sell only for seed and be sure to retain enough seed for your own land.

Rye a Good Crop to Raise.

Rye will prove a very beneficial crop. The yield compares favorably with wheat and the price bids fair to be good in proportion. The allies in Europe will accept rye almost equally with wheat as a bread grain. Among other considerations should be mentioned the fact that rye stands the winters well, doing even better than wheat or oats. In the coastal-plain section be sure to see that you get a variety well adapted to that section. Consult your county agent and consider rye for a part of your land for the winter crop.

Place your orders for fertilizers and for lime and seed as early as possible on account of the problem of transportation in full carload lots, and have them on hand in ample time for use. Remember that in this time of emergency things are apt to be delayed.

Get Ready for the Fall Rush.

August is generally a season of lull, during which the farmer may attend to a great many things and get ready for the busy season in the fall. Look up the question of storage for the corn, hay, and sweet potatoes. If you have an increased acreage in corn do not let the season of harvest come on without some provision for taking care of the product, properly drying it, preparing the surplus for market, and storing the reserve supply so that it will not be wasted and you can use it during the fall, winter, and spring. Where are you going to get your surplus corn shelled for market, and are good, clean, new sacks available for sacking it? If not, you should make inquiries and find out.

If your hay is stacked in the field examine the stacks from time to time and see that the hay is not spoiling. Make sure that the stack is properly rounded out so as to shed water and prevent spoiling of the hay, which comes from irregular and poor stacks.

Is there a sweet-potato storage house at your town and can you secure space in it for the storage of your crop? If you have any considerable quantity of sweet potatoes growing it will pay you to look into this. If there is no sweet-potato storage house near you, inquire of your county agent, look up the total number of acres now growing, and consider with your neighbors and others the advisability of erecting a modern storage house for sweet potatoes. Your State agricultural college and the United States Department of Agriculture will be very glad to give you any assistance and help to furnish plans.

In preparing your land for fall crops, if you are in a hilly section where the lands wash badly, do not forget to build your terraces before planting the fall crops. Consult your county agent and get instructions in properly terracing to prevent erosion.

NORTH AND WEST.

(*Continued from page 3.*)

mal years and then increase that normal 10 to 20 per cent. Rye may well be seeded now in the standing corn and after early potatoes, as a fall and spring pasture crop to be later "hogged off" after grain has formed. Such a practice builds up light lands rapidly, and is economical of labor. Like wheat, rye responds profitably on most worn soils to an application of 200 pounds per acre of 12 to 14 per cent acid phosphate. There are varieties of rye adapted to clay soils, others to sandy soils. Sow the variety adapted to your locality. If in doubt the advice of the county agent or the extension director of the State college of agriculture should be sought.

Peaches and Apples.

The height of the peach harvest will come in August and attention should be given to securing pickers, packers, and packages. State and Federal laws regarding the net contents of packages should be understood so that shipments may not be held up for failure to comply with the legal requirements.

The early fall apples will be harvested during the next 30 days. For these apples, as well as for the later ones, it is advisable to be on the lookout for a supply of suitable packages. Much loss will occur if delay is made in securing necessary boxes and barrels.

See to the Silo.

The silo is a proved economy in feed saving. In conjunction with legume hay it reduces the grain bill, and all our surplus grain will be needed this year for our allies. Everything possible should be done to get new silos built and old ones put into condition. Plans for filling of all silos should be perfected. Hay, when weather conditions will not allow it to be cured, can be put into the silo. Investigation made recently in Porter County, Ind., by the State college of agriculture and the United States Department of Agriculture show that the dairymen who feed legume hay obtained as much milk from 62 pounds of grain as others obtained from 100 pounds of grain.

Maximum Forage and Minimum Grain.

Plans should be made this year to feed all stock the maximum of forage with the minimum grain ration consistent with economy. Provide plenty of pasture for hogs. Hogs may be finished while on pasture with the self-feeder and save both grain and labor. From the standpoint of economy the hogs should be marketed when they weigh 180 to 200 pounds.

Poultry to Increase Food.

Poultry production is one of the quickest and simplest ways of increasing the meat supply in an emergency. There are few farms that could not profitably produce all the poultry needed for home consumption and have a surplus for sale. Poultry-club work as a means of increasing food production, therefore, assumes more than its wonted importance now. The State agents engaged in such work are properly very active, and the department is aiding the work to the extent of its ability. The publication of a series of timely leaflets, to include eventually one for each month of the year, dealing with the things most important to do at the time of issue, has been begun.

Importance of Accounts.

At this time it is as important for the farmer as for the business man or manufacturer to keep records which enable him to figure accurately costs and profits. Many farmers do not keep such accounts. The county agent or State farm management demonstrator located at the State agricultural college will assist them in starting and keeping adequate records.

WINTER OATS FOR FALL SEEDING.

The committee on seed stocks of the United States Department of Agriculture has compiled a list of county agents in the South in whose counties there is a surplus of oats suitable for fall seeding. This list is divided into three sections: (1) Counties where the agents actually report surpluses; (2) counties from which no reports have been received, but which are believed to have stocks in excess of local needs; (3) counties in Texas where there are considerable surpluses of red rustproof oats from spring seeding. These Texas rustproof oats are not generally recommended for fall seeding in the South, but may be used in Louisiana, Florida, and southern Mississippi, Alabama, and Georgia if stocks grown from fall seeding are not available. The list will be supplied on request.

TO ASSIST GROWERS.

Secretary of Agriculture Favors Helping Producers of Perishables by Every Approved Means.

The Secretary of Agriculture made the following remarks to a conference of business men and others, which met at his request on July 17 to consider the conservation of surplus fruits and vegetables:

"The farmers, aided by nature, have made a magnificent response to the appeals of the President for increased production. Not only is there a prospect of large crops of certain staple products, but it is apparent that there will be a particularly large output this year of perishables. Many agencies throughout the country have especially urged the people, not only in the country districts but also in urban communities, to plant gardens. There is therefore not only an increased production in the usual areas, but a considerable addition in these new places.

Marketing of Perishables.

"The marketing of perishables presents peculiar difficulties. They must be marketed promptly. The danger always is that of bad distribution and of a glut of the markets. There is a further danger that, either through inability to reach the markets or through neglect, a very large part of the perishable products will be lost to the consuming world. It is therefore of the first importance that every assistance shall be given to growers of perishables in the marketing of them, and also that surpluses shall be preserved through every approved means.

"For many years the department has been furnishing assistance in the canning, drying, and preserving of perishables as well as in their marketing. In the last four years, in particular, great extensions of activities in this field have been made. A Bureau of Markets, with varied activities and forces reaching into very many sections of the Union, with a regular budget of nearly $2,000,000 has been built up. It has rendered aid in many directions. Through the evolution of the market news service it has been particularly helpful to truck growers. Under the food-production bill, now pending before Congress, large extensions of the activities of the department in the field of marketing, especially the marketing of perishables, and of the conservation of these products, of other farm products, and of live stock, are provided for. The bill carries one item of $4,348,000 for additional assistance in the production and conservation of farm products, involving in particular the extension of the county agent and home demonstration system. It carries another item of $2,522,000 for the emergency extension of the marketing work.

Points to be Considered.

"It has been a part of our program to call to our aid men actually engaged in the handling of such commodities, and hence our appeal to you. The particular points for consideration at this time are the ascertaining of the areas in which special service can be rendered, the best means of conserving surplus perishables through canning, drying, or other devices, the securing of adequate supplies of containers, the improvement of marketing conditions, and the most helpful agencies to be enlisted for service.

Conferences on Other Subjects Foreshadowed.

"I may add, in passing, that this is only one of a number of conferences which the department is planning to hold with farmers and farmers' organizations, stockmen and live-stock organizations, and representatives of State committees on food production and conservation, of the State departments of agriculture and of the land-grant colleges with reference to other important problems and especially with a view to having the best answer to the question, How to get ready for next year."

STORAGE MEN COOPERATE.

Full Records of Meat, Poultry, and Dairy Supplies Are Given Voluntarily to the Government.

Practically every storage company in the United States is now cooperating with the Government in reporting the cold-storage holdings of food products, according to a statement made by the Bureau of Markets, United States Department of Agriculture. These reports include meat, poultry, eggs, butter, cheese, and apples, and are issued monthly by that bureau.

When the work first started, in 1914, the bureau says, only a few firms reported in response to the requests for information; and there never has been any legislation which made the submitting of these reports compulsory. Gradually, one firm after another volunteered its reports, until now the field is almost completely covered. The importance of the statements of storage holdings never has been so great, in the opinion of the department, as it is to-day in connection with the world food crisis.

Value to the Public.

Through the cooperation of the press, the public is kept informed of the facts, and the officers of food administration, for example, are able to make specific recommendations on the basis of the reports. No monthly cold-storage statement issued by the department gives less than 98 per cent of the entire holdings and most of them are fully complete. The margin of 2 per cent or less is partially due to delay in reporting, because of unusual conditions at a warehouse at the time the reports are due on the first of each month. Even then a telegraphic request from the department usually brings a wired answer which fills out the report.

On the present meat situation, for example, the report shows that there is a storage response to the prospective demands for war emergencies, and that more than a hundred million pounds of frozen beef are in storage, or more than half again as much as was on hand last year at the same time. Moreover, during the month of June this year, the storages kept on increasing their stocks and added nearly 5 per cent to what they already had on hand; whereas in 1916 the storages which reported showed greatly reduced supplies, a one-fourth or 25 per cent decrease being noted during June a year ago.

SAVE WINTER RYE FOR SEED.

Farmers in the southeastern States who have winter rye are urged by the United States Department of Agriculture to thresh it and to save it for seed. Because of the general failure of the winter-oat crop in this section this year and the shortage and high prices of vetch and crimson clover, it is probable that there will be much more than the usual demand for rye for use as a winter grain, cover, and green-manure crop. Northern varieties are not suitable for sowing in the South and the acreage of rye in the southeastern States is small, so that the available supply of suitable varieties is limited. Good use can be made of every available bushel of this crop grown there this year.

Let County Agents Know Your Needs.

Farmers in the southeastern States who have rye of good quality should inform their county agents as to the variety they are growing and the quantity and price of the seed they have. This information may also be given to the director of the State experiment station or to R. A. Oakley, chairman of the committee on seed stocks, United States Department of Agriculture, Washington, D. C. Inquiries regarding seed may also be addressed to the station directors or to the United States Department of Agriculture.

Sometimes poison ivy can be exterminated by pouring sulphuric acid or strong brine around the base of the cut stem.

SHIPPING WATERMELONS.

Treatment with Copper - Sulphate Paste Proves Successful in Preventing Stem-End Rot.

To prevent the stem-end rot that has caused heavy losses to melons in transit in previous years, apply starch paste with 6 per cent copper sulphate (blue stone) to the end of the stem, is the urgent message the United States Department of Agriculture is sending to water-melon shippers. Bordeaux paste also can be used, but the copper-sulphate paste is better because it is nearly invisible when dry.

The copper paste is most effective when applied after the melons are stored in the car. Store them with the stem end out and have a boy with a knife cut off a small piece of stem leaving a fresh cut. Do not skip a single melon. With a small brush apply the paste thoroughly but carefully to the freshly cut stem end. Take pains not to smear the paste over the rest of the melon as this detracts from its appearance in the eyes of purchasers. Shippers intending to treat melons for stem-end rot would do well to cut them with longer stems so that there will be room for a fresh cutting after the fruit is in the car.

Melons treated by this method as recommended in Farmers' Bulletin 821 have been practically free from stem-end rot, whereas shipments from infected districts which were not treated have given much trouble. In one case, two cars arrived in a northwestern city on the same day, one, untreated in a ventilated car, had 25 per cent of decay, while the other, which had been treated, although in an ordinary, unventilated box car, had only 2 per cent of decay.

Several large shippers are now insisting that this treatment be given all melons they buy, and it appears likely that the department's method of control will quickly come into general use. The results secured in Florida and South Georgia justify the adoption of the treatment in districts now shipping.

To Make Copper-Sulphate Starch.

The following directions for making 6 per cent copper starch in gallon lots are quoted from Farmers' Bulletin 821, "Watermelon Diseases:"

"Use a large kettle of *enamel ware*, as the bluestone attacks iron or tin. Place 3½ quarts of water and 8 ounces of bluestone in the kettle and bring the mixture to a boil over a good fire. While it is heating, mix in a separate vessel 4 ounces of starch with 1 pint of cold water, stirring until a milky solution free from lumps is obtained. As soon as the bluestone is entirely dissolved and the solution boiling, add the starch mixture, pouring it in a slow stream and stirring the hot solution vigorously to prevent the formation of lumps. Continue boiling and stirring the mixture until the starch thickens evenly. It may be tested at intervals by allowing it to run from the end of the paddle. This should not require more than one or two minutes' boiling after the addition of the starch.

"The paste seems to be more readily applied when made up fresh, but if it is desired to make up a quantity at one time it may be depended upon to keep a week or two by using only one-fourth to one-half the proportion of water previously specified and then diluting the resultant thicker paste to the proper consistency as needed for use. Quart glass fruit jars with glass or enamel-lined tops make convenient containers."

Where it is impracticable to make a paste, good results can be obtained with a commercial Bordeaux paste thinned with water to the consistency of paint. As in the case of sulphate paste, be careful not to smear the Bordeaux paste on the melon.

Effectiveness of the Treatment.

The stem treatment is effective against stem-end rot, and reports that treated melons have rotted indicate that the rot was due to anthracnose or causes other than stem-end rot.

The subject is fully discussed in Farmers' Bulletin 821, "Watermelon Diseases," which treats in detail wilt, root-knot, and anthracnose, as well as stem-end rot and the many minor diseases; this bulletin should be in the hands of every watermelon grower.

WHAT CAN YOU CAN?

A week or so ago one of the canning experts of the United States Department of Agriculture reported that a group of girls in a small southern community had this year added their bit to the country's food supply by putting up 7,290 quarts of tomatoes, 2,850 quarts of peas, 324 quarts of okra and tomatoes mixed, 260 quarts of soup mixture, and 850 quarts of guavas. The canning season for the North is now upon us. If in each northern community a group of girls were to follow the good example of these southern girls, the H would soon disappear from the H. C. of L.

The United States Department of Agriculture will tell you how to can and dry all your surplus fruits and vegetables. Just send a card to the Division of Publications, Department of Agriculture, Washington, D. C., asking for bulletins on home canning and drying of fruits and vegetables.

Starve, trap, or poison rats. It is especially important at this time to save the food rats waste.

CAN CAREFULLY.

How to Avoid Canning Troubles—Care Is Especially Necessary in Use of Simplified Method.

Careful, painstaking canning is the only kind of canning that pays, declares the United States Department of Agriculture in a statement issued to-day warning housewives against carelessness in putting up fruits and vegetables.

"The faithful following of approved methods and directions is the only safe road to success in canning," says the statement. "Housewives who carelessly practice methods that are new to them, or who attempt to 'improve' on the methods, or to make short cuts, are taking a risk of spoiling good food. Canning is essentially a scientific process, however much it may have been simplified for home use.

Method Should Be Followed in Detail.

"In the canning methods which the department advocates careful study has been made of the essentials for the preservation of food products, and all steps not absolutely necessary have been eliminated. There is good reason, therefore, for each step which is advocated. If home canners profess to follow a department method, they should follow it in detail; and if they fail so to follow it, they should frankly recognize that not the method but the application of it is at fault. Especially there should be no mixing of methods, whether those of the department or others. One method should be adopted and followed carefully in canning any given batch of products.

One-Period Cold-Pack Method.

"In the one-period cold-pack method of canning, in particular, canning has been simplified greatly as compared with some other methods. For this very reason every step called for in the directions is essential, and not one should be omitted or performed otherwise than as indicated. Specialists who have worked out and demonstrated this method of canning for the last five years have investigated all reports of the spoilage of products and have found in every case that the trouble was due to faulty equipment, including poor rubbers and containers, to failure to follow the directions carefully, to the use of old or spoiled vegetables or fruits, or to the local occurrence in certain vegetables of unusual spores which prove troublesome even under commercial canning practices. By following the simple directions exactly the specialists themselves have put up with homemade water-bath outfits, without loss, thousands of jars and cans of various products.

"The following points especially should be kept in mind when canning by the one-period cold-pack method:

"Test jars, and use only those free from flaw.

"Use only good quality live rubber rings.

"Use only fresh, sound vegetables or fruits.

"Wash products thoroughly.

"Blanch in boiling water or live steam—hot water or vapor will not do.

"Dip into cold water—not tepid or warm water.

"Dip quickly into and out of cold water—do not soak.

"Pack into jars immediately—do not let the dipped products stand uncovered while you attend to something else.

"Be sure the jars are hot when the product is put into them. They can be kept hot in vessels of boiling water.

"Place the top and rubber on each jar as it is filled—do not wait until all the jars are filled.

"Place the jars in boiling (not merely hot) water deep enough to cover them entirely (not merely part way up the side of the jars).

"Sterilize for the full time indicated in the directions. Count time after boiling point has been reached.

"After sealing, turn jars upside down to cool, so that those with leaky seals may be found easily and so that their contents may be resterilized in tight-sealing containers.

"Store in a cool place—not in a hot kitchen or attic.

"Above all, plan so that you will not be interrupted. Then work quickly and devote your whole attention to the work in hand. Let all other housework go, if possible, until all the jars are in the sterilizer. Any delay in performing the steps between blanching and sterilizing means risk of loss."

MARKETING.

(*Continued from page 3.*)

pose, i is even more difficult than usual. It is essential that the producers and shippers provide greatly increased storage facilities, particularly air-cooled or common storage.

Put in shape the facilities you have, provide more if necessary, or, if you have none, provide sufficient to take care of a considerable portion of the crop. In the construction of such storages keep in mind two fundamentals—the providing of sufficient insulation and the provision for effective ventilation or cooling by means of the colder outside air. Provide the facilities now. Do not wait until the rush of the season is on. Have them ready. It should mean money in your pocket and more food for the country. In sections where the harvesting season is not yet on, provide now for boxes, crates, barrels, packing machinery, etc. Put the packing house in order; provide in so far as possible for labor and foremen; familiarize yourself with requirements as regards package markings, either State or Federal.

Utilize every practicable means for conserving all fruits and vegetables not suitable for shipment in fresh state. Plan and decide now how you will handle the off-sizes and such fruits and vegetables as can not be shipped profitably in a fresh state. Conserve it if possible and practicable. You can not afford to waste food.

Cooperative Marketing Associations.

Many producers fail to receive the highest returns for their products because they do not pay sufficient attention to their marketing problems. In many instances, this is due to the fact that the output of the individual growers is not sufficiently large to enable them to gain extensive market information or find the best outlets for their products. A cooperative association when properly organized and operated frequently renders efficient service to communities of such producers.

It is important that all communities contemplating marketing this season's products cooperatively should take immediate steps to perfect an organization for this purpose if they have not already done so. A community intending to form a cooperative marketing organization should select representative committees of producers to ascertain the need for cooperative effort, the amount of business available for such an enterprise and the support it is likely to receive, and to formulate plans and draft suitable by-laws for the organization. An association should not be formed unless there is sufficient demand for such an enterprise and the amount of available business is large enough to make it practicable.

It is important that such organizations be well established and fully prepared in order that they may handle the work of marketing efficiently. All cooperative marketing organizations should plan for the coming activities and lay down a complete program of action.

Cooperative organizations should take an active part in solving problems of harvesting and labor supply. Grades and standards should be formulated if they have not already been established. Likewise a system of inspection should be decided upon in order that the products shipped will be of proper grade, quality, and uniformity. Complete information relative to the local production and the amount of business available for sale through the association should be secured. Information relative to the production of other localities is also of importance. The management of cooperative marketing associations should keep in close touch with the outlets for the products handled and market conditions. Transportation problems are also of prime importance and should receive careful attention by the association.

As a first step toward successful marketing the farmer should plan to pick his cotton as soon as possible after the bolls open, because if it is allowed to be exposed to the weather too long after reaching maturity it becomes discolored and leafy. Ordinarily, cotton gathered with care from the first pickings should grade from strict to good middling or better. According to prices prevailing July 18, the difference in value between middling and strict middling is $1 per bale; between strict middling and good middling $0.95 per bale; and be ween good middling and strict good middling, $1.95 per bale—or a total of $2.80 between middling and strict good middling.

Never expose cotton to the weather by leaving it on the ground. Cotton so exposed will be reduced in grade by discoloration, especially if a rain storm should occur. If it is loaded in wagons it should be covered over night so that it will not become wet either by heavy dew or rain. Farmers should arrange for shelter for cotton in advance to save delay and confusion.

Under no circumstances should seed cotton be taken to the gin unless it is thoroughly dry, as a bale which has been gin cut or poorly ginned is always penalized heavily by the buyer.

Get acquainted with methods used at your gin and arrange for proper methods on your this year's crop. The mixing of cotton from different wagons is an evil prevalent at many of the gins. This causes what is known as plated bales, and since the bale is sold by the lowest grade it contains such cotton is usually penalized. Every farmer should insist upon the ginner running out completely all of the cotton belonging to the customer that preceded him. A high grade of cotton following a low grade on the same gin is sold on the basis of the lower grade, even if it is only a few pounds. Thus a careful farmer is penalized because of the carelessness of the ginner.

Arrange to have your bales covered after ginning and have them marked and properly stored. They should not lie on the ground even when protected by a cover, because the resulting damage through dampness, mildew, and subsequent discoloration often affects a large portion of the cotton in the bale, and compels the buyer to penalize it excessively.

The cotton producer should plan to have his seed cotton ginned and should sell his baled lint and his seed separately. In the majority of cases the seller of cotton in the seed loses money.

The custom of selling unginned cotton should be discontinued, except in communities of scanty production or where the farmer does not have sufficient seed cotton for a bale.

The cotton producer, ginner, and seed merchant are urged to handle their seed with care so as to prevent damaged and

dirty seed, and the oil mills should be encouraged to buy seed on grade so as to offer a proper incentive for the production of good seed. Such practices will result in benefits to all who are engaged in the cottonseed industry and will result in better cottonseed products, thereby benefiting the consuming public.

Foreign matter shou d not be mixed with cotton seed and sold to the oil mills as seed. In the process of ginning foreign matter should be separated as much as possible. The large amount of trash usually present has resulted in the practice by the oil mills of buying seed on an average basis, thus penalizing the producer and ginner who are handling seed in an intelligent manner, and in paying a premium to the careless and indifferent farmer.

COTTONSEED PRODUCTS.

Rules and Regulations Governing Their Importation.

Rules and regulations governing the importation into the United States of cottonseed cake, meal, and other cottonseed products from all foreign countries have been promulgated by the Secretary of Agriculture to become effective July 16, 1917. The rules and regulations apply to all cottonseed products, including oil, originating in Mexico, and to all the products except oil originating in other countries.

Get Permits from Secretary of Agriculture.

Persons contemplating the importation of the cottonseed products covered in a given case must apply to the United States Department of Agriculture for permits, giving details in regard to the proposed shipments and the exporters and importers. Permittees must notify the Secretary of Agriculture of the arrival of consignments under permit. Entry will be permitted only when the shipment is accompanied by a certificate issued by the exporters stating that the articles covered by the permit have been safeguarded from contamination with raw cotton seed. The imported articles can be moved from the port of entry only after inspection by an inspector of the Department of Agriculture and on written notice by him that they are released for entry.

Products Originating in Mexico.

From Mexico, only cotton products originating in mills located in the Laguna district will be permitted to enter the United States. Such products offered for entry at ports on the Mexican border must further comply with the rules and regulations governing the entrance of railway cars and other vehicles, and freight, express, baggage, or other material from Mexico at border ports into the United States, issued June 23, 1917.

The rules and regulations do not apply in any way to meal, oil, and to other cottonseed products originating in and shipped directly from the Imperial Valley, Lower California, Mexico.

HOW TO CAN STRING BEANS.

Method Recommended for Use in the South.

String beans for canning should be small, tender, fresh, and well sorted. When the beans within the pod have grown to any size, canning is more difficult and the product of poorer quality from a commercial standpoint. String the beans and cut them into 2-inch lengths; cutting diagonally or "on the bias" gives a pretty product. In glass they may be canned whole, packed log-cabin fashion in square jars. Blanch in boiling water for three to eight minutes or until the pod will bend without breaking, and plunge into cold water for an instant. Drain well, pack quickly, and cover with brine made by adding 2½ ounces of salt to a gallon of water. Put the rubber in place and adjust the cap loosely. When the beans are young and tender allow packed quart containers to remain in water bath at boiling temperature two hours continuously, or, if more mature beans are packed, an hour on each of three successive days. Immediately after sterilizing the filled jar tighten the cap securely and allow jars to cool away from any draft. Store in a cool, dry, dark place.

TO ASSIST BUREAU OF MARKETS.

The Secretary of Agriculture has secured the services, for a temporary period, of Prof. William F. Gephart, of Washington University, and Prof. Charles S. Potts, of the University of Texas. They will assist the Bureau of Markets in attacking problems affecting the handling and distribution of agricultural food supplies.

Dr. Gephart is dean of the college of commerce and finance of Washington University, and has served as professor of economics of the Ohio State University and of Washington University for several years. He has made a lifelong study of problems affecting the handling and distribution of agricultural products, and is the author of several publications on economic subjects. Prof. Potts is assistant dean of the law school and professor of government at the University of Texas, and has published much material relative to economics and sociology.

RYE IN THE SOUTH.

Largely Increased Acreage Urged to Take the Place of Oats, Crimson Clover, and Vetch.

A large increase in the acreage of rye should take place in the cotton belt this year, the United States Department of Agriculture advises. There are many good reasons for this recommendation. Rye will succeed on the sandy lands of the coastal plains where wheat is not adapted. It requires less fertilizer than wheat. It is more hardy than oats. Because of the heavy winterkilling of oats last winter there will not be sufficient seed in many localities for the usual oat crop. Under this condition rye should be sown in place of oats. Rye should be used to considerable extent this year to replace the leguminous winter cover crops, especially crimson clover and hairy vetch, the seed of which is very high in price at this time. Rye also will furnish a bread grain in localities where wheat can not be grown which by the installation of small mills can be utilized for food in various communities.

Select Varieties Adapted to Region.

In increasing the acreage of rye in the southern part of the cotton belt care must be taken to secure a variety that is adapted to conditions that exist there. Varieties adapted to the northern States or even varieties adapted to the northern part of the cotton belt are not desirable for sowing in the coastal plain. There are, however, strains of rye grown locally and known by several local names such as South Georgia rye, and Florida Black-seeded rye, which are well adapted in the coastal plain. The Abruzzes variety grown very generally in the cotton belt is also an excellent sort for the coastal plain. The Abruzzes, on account of its rapid and vigorous growth, is very valuable for cover crop purposes in addition to its value as a grain crop. The Abruzzes, in addition to being adapted to the coastal plain, is also adapted to conditions anywhere in the cotton belt.

Cooperate on Seed Supply.

Seed of varieties suited to the southern half of the cotton belt is not sufficient this year for the acreage that should be sown. All of the rye grain produced of suitable varieties, therefore, should be reserved for seed in order that a very large acreage may be sown this fall in the sandy lands of the coastal plain. Those who have seed are urged to supply it to their neighbors for sowing only, at reasonable prices and if there is any excess to notify their experiment station or the Department of Agriculture giving amount and price of seed on hand.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

Reserve.
1
Ag84W
v.4.
U.S.D.A. weekly news lett
1916-1917
JUL 20 1938 Bibliothm Serv
AUG 1 1916
GPO 8—2432